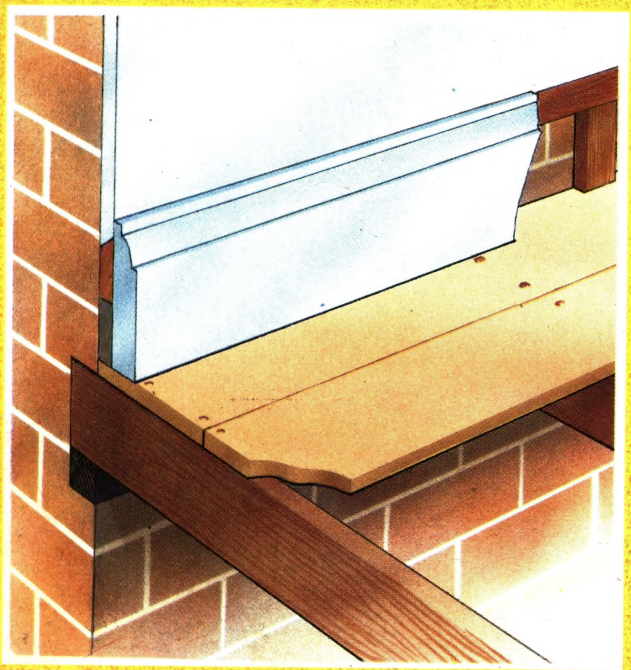
A Marshall Cavendish Publication in weekly parts

Part 5

THE KNACK

The complete manual of DIY skills, projects and home ideas

It's easy when you've got the Knack



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THE KNACK

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Note: We take great care to ensure that the information in The Knack is accurate. But because building regulations, local bylaws and the construction of existing houses vary so greatly, we can accept no responsibility for loss or damage caused by the misapplication of any instruction.

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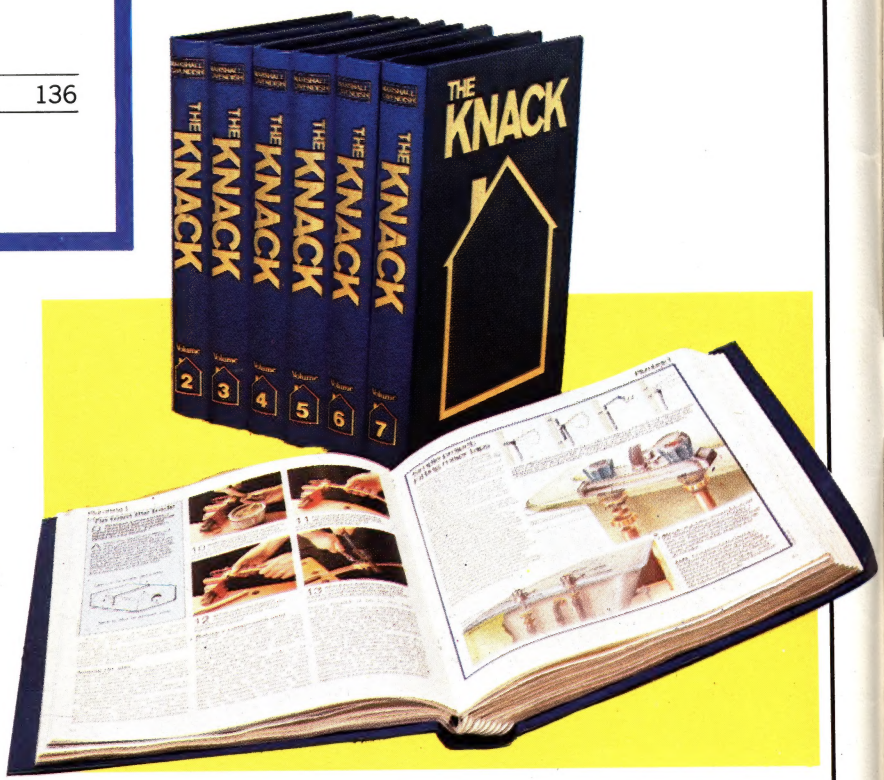


Published by Marshall Cavendish Partworks Ltd, 58 Old Compton Street, London W1V 5PA. © Marshall Cavendish Ltd 1981, 1982, 1984. Printed in England by Varnicoat, Worcester

Painting interior woodwork

Surface preparation • Using a blowlamp • Making good • Which paint to use • Painting doors • The right way to set about skirtings and architraves • Dealing with sash windows

John Ward

Repainting the woodwork around the house will give your decoration a facelift for very little cost. And if you set about it the right way, you can be sure of a really professional finish.

Preparing the surface

Whether painting over new woodwork or a surface that has been painted previously, it is vital to make sure that the surface is sound, clean and dry.

With new woodwork, smooth the surface down with glasspaper, slightly rounding off any sharp edges. Treat knots or resinous patches with a knotting compound to prevent them from leaking sap through to the new paint. You can either buy this or make up your own from 70 parts of methylated spirit mixed with 30 parts shellac. Apply the knotting as accurately as possible, using a small brush or a pad of cloth wrapped round one finger. Fill cracks and open joints with a cellulose filler such as Polyfilla.

Above: *A light upward stroke of the brush will ensure that your painted surface is free from unsightly streaks and ridges*

To ensure that the paint adheres to the surface, new wood should be given a coat of primer. Primer also partially seals the wood surfaces, preventing leaking sap from spoiling the final coat of paint.

Check that the primer you use is suitable for the particular type of wood to be painted. Highly resinous wood should be treated with aluminium wood primer which has very effective sealing qualities. If in doubt about which primer to use for a particular job, consult your paint dealer.

In most cases, previously painted woodwork needs no more than cleaning and lightly rubbing down to prepare it. Remove all dirt and grease by washing the surface with warm water and detergent or sugar soap, paying particular attention to areas on doors which are handled often and to wax polished surfaces.

If the paintwork has been particularly exposed to grease, in a kitchen for example, use a proprietary paint cleaner. Rinse off with plenty of clean water and allow the surface to dry.

To key the surface for the new paint, old gloss must be abraded to remove its shine. Although glasspaper can be used for this, better results are obtained with wet and dry paper, used wet.

Dealing with damaged surfaces

Unless a damaged surface is thoroughly prepared beforehand, flaws such as blisters and bubbles will be accen-

1 *When treating woodwork that has been previously painted, abrade the old gloss to remove its shine and provide a key for the new paint*

2 *When the old paintwork has been sanded, wipe over it with a cloth dampened in white spirit to remove any traces of dust and grease*

tuated and may spoil the finish.

Blisters and bubbles are usually caused by pockets of moisture or resin which become trapped beneath the surface of the original paint coat. Use a sharp knife to cut out the blistered paint, smooth off the hard paint edges with glasspaper then treat the area with multi-purpose primer.

Large or resinous knots and small resinous patches in woodwork should be treated with a knotting compound.

Flaking paint is most likely to be found on window frames which have been affected by the weather and by condensation. Remove as much of the loose paint as possible with a paint scraper or sharp knife (fig.3). Smooth down the area with glasspaper until all the remaining paint is quite sound. Any knots that have been exposed in this process should be dealt with as described above.

Cracks occur when wood joints have dried out or split. The most common problem areas are window frames, architraves—the mouldings around doors and windows—and the corner joints in skirtings (baseboards). Start by widening the cracks with a sharp knife, raking out any dust and dirt as you go. Prime the enlarged cracks and plug them with cellulose filler (fig.6). When dry, smooth with glasspaper (fig.7) and prime with a multi-purpose primer.

Particularly large or deep cracks should be filled in layers. Allow each layer of filler to dry before you start to apply the next.

Chips and dents develop through general wear and tear. Correct them as you would blisters and bubbles, using cellulose filler to level up the areas with the outer paint coat. When dry, sand smooth and prime.

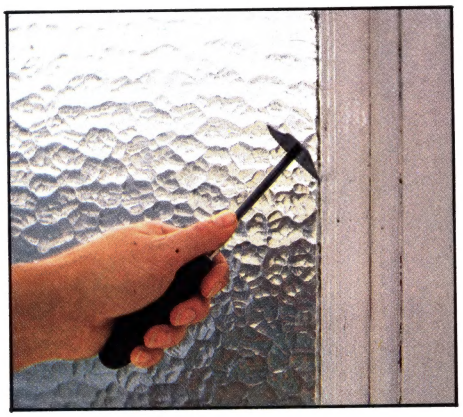
Stripping paint

If a painted surface is particularly badly damaged, strip the paint off completely. Although paint can be stripped using just a paint scraper, this can become tiring over large areas. More efficient methods are chemical stripping (see pages 36-39) or heat stripping with a blowlamp (propane torch) and scraper. However, use a low flame—and extra caution—when stripping window frames with a blowlamp as the heat may crack the glass.

If you decide to use a blowlamp, buy a special paint-stripping head which spreads the flame over a wider area (fig.8). Use a waste tin to catch the pieces of hot paint, making sure none falls on the floor.

Begin stripping at the bottom of an area and work upwards, covering only a small area at a time. Play the flame from side to side to avoid burning the paint and charring the wood. As the paint melts, scrape it off holding the scraper at an angle so that shreds of hot paint do not fall on to your hand. For stripping mouldings, use a shave

3 *Remove any flaws on the surface of old paintwork, such as flaking paint around removed door fittings, with a paint scraper*



4 *Paint on the areas around window frames and glass panels in doors often flakes. Scrape off as much of the old paint as possible*

5 *Use a paint brush to apply primer to any areas that are chipped or dented, or where old paint has been stripped altogether*

6 *Use cellulose filler to fill in any chips and dents in the wood, so that the damaged areas are brought up level with the existing paintwork*

7 *When the cellulose filler is dry, smooth the area with glasspaper wrapped around a wood or cork block, then prime the area again*

8 *Use a paint-stripping head when stripping paint with a blowlamp. Play the flame from side to side to avoid charring the wood*

hook (fig.9). When all the paint has been stripped off, prime the bare wood.

Undercoats

If you are painting new wood that has only been primed, or over paintwork of a different colour, it is advisable to apply an undercoat to provide a good key for the final coat of gloss. Check the paint charts when buying the gloss and undercoat to make sure they are compatible. Leave the undercoat until dry—the manufacturer's recommended drying time will be given on the tin—before applying the gloss top coat.

Gloss paint

Interior woodwork is traditionally painted with gloss or semi-gloss paint. Doors, skirtings and window frames all take quite a few knocks and gloss paint stands up to hard wear better than flat paints—as well as being easier to clean with a damp cloth.

Traditional gloss paint is oil-based and includes resin to give it hard wearing qualities. Acrylic paint is a water-based gloss which is jelly-like in consistency, and does not drip. It should never be stirred, however, as this will reduce its non-drip qualities. If applied incorrectly, gloss shows up blemishes and brush marks more than any other type of paint. It is therefore vital to use proper brush strokes.

Apply ordinary gloss quickly, evenly and in as full a coat as possible. Using acrylic paint, apply a little at a time and take care not to overbrush or runs will occur. For small areas of woodwork, your brush strokes should always run the same way as the grain of the wood.

In large areas, brushing in three different directions will help you obtain a smoother finish. Start by applying the paint in a random way, criss-crossing the brush: when a section has been covered, draw the brush over the paint horizontally. Finally, 'lay off' the paint by running the brush upwards over the paint very lightly so that no mark is left (fig.10).

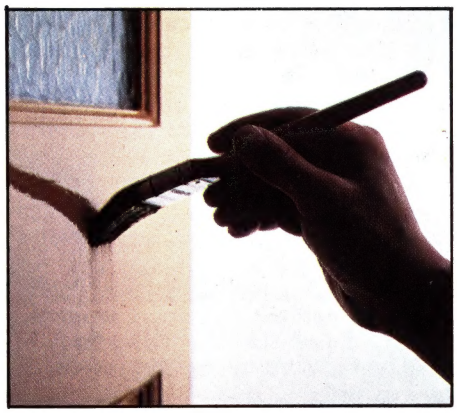
Painting doors

Doors are not as easy to paint as you might think. To make the job easier, start by wedging the door base against the floor with a wedge or screwdriver. This will stop it from swinging shut, and perhaps ruining a wet edge. Remove as much metalwork as you can including handles, knobs and key escutcheons.

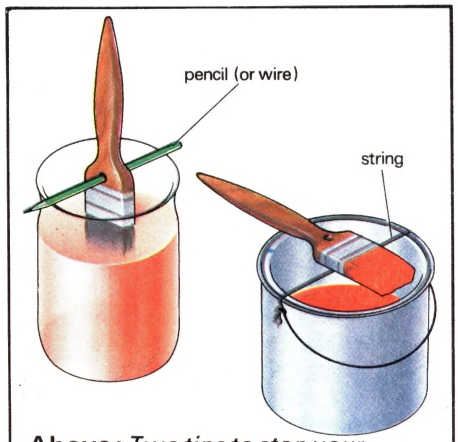
When painting flush doors, start at the top and work down in rectangular sections using a 75mm brush. Work quickly so that the paint does not harden before you have completed an adjoining section. Blend the sections carefully as you go, to eliminate any overlap marks.

Apply the paint by making two or three separate down strokes. Without reloading the brush, fill in any gaps by

9 *Use a shave hook when stripping mouldings. To prevent shreds of melting paint from falling onto your hand, hold the tool at an angle*

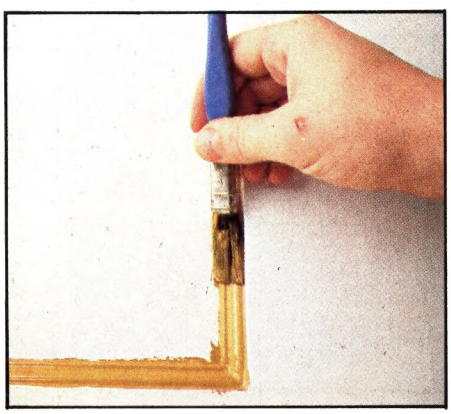


10 *To ensure that no brush mark is left on finished paintwork, 'lay off' the paint by running the brush upwards with a very light stroke*



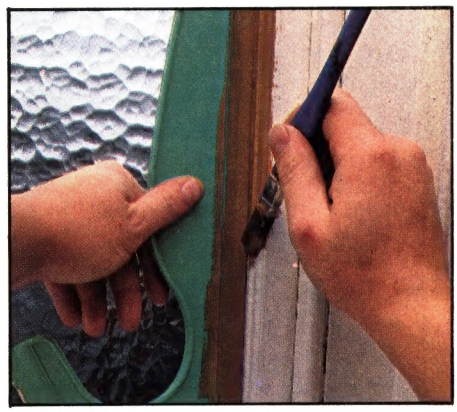
Above: *Two tips to stop your paintbrush getting in a mess and to keep the bristles in perfect condition*

Bernard Fallon



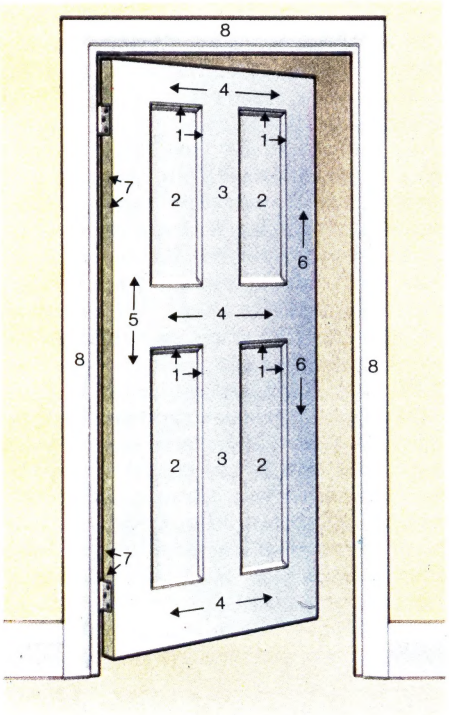
11 *For mouldings on panel doors, use a 12mm brush. Apply the paint sparingly so that it does not accumulate in ugly ridges*

12 *When painting panels, start brush strokes from the edges and work towards the middle. Blend the edges to eliminate overlap marks*



13 *To keep paint off glass, protect it with a paint shield. If paint does get onto the glass, wait for it to dry, then scrape it off*

John Ward



A. *The painting sequence for a panel door. Panel doors should be painted in one session without pauses*

cross brushing then gently lay off the paintwork. When you are painting the edge of the door, use a brush slightly narrower than the width of the edge. If you use a wider brush, paint is likely to run down the front and back surfaces of the door.

Panel doors should be painted in a strict sequence (fig.A) and as quickly as possible—any pauses will result in the formation of a hard edge which is almost impossible to remove.

When painting mouldings in a contrasting colour to the rest of the door, use a 12mm brush to work the paint well in to each corner (fig. 11). Do not overload the brush or paint will accumulate in ugly ridges.

Skirting and architraves

Start painting skirtings (baseboards) at the top edge and architraves at the edge where they meet the wall.

To brush up, or 'cut in' to the wall at this point, use a cutting-in tool—a specially angled brush—or a 25mm brush on its side. Avoid overloading the brush, dipping it only about 13mm into the paint. Cut in with one, continuous stroke, supporting your 'painting' hand with the other hand to steady it.

B. *To 'cut in' where a skirting board or an architrave meets the wall, use a shaped cutting-in brush*

If walls are to be papered, extend the paintwork about 10mm up the wall above the skirting.

Paint the remaining parts of skirtings and architraves with a wider brush—50mm or 75mm—following the grain of the wood.

Windows

The paintwork on wooden windows must be kept in good condition if the frames are to be prevented from rotting. You should therefore take the opportunity of painting the top and under edges of any opening frame at the same time as the visible ones.

Remove any window fittings such as sash fasteners and make sure that the surface is clean and sound. Clean the glass, to prevent any dust or dirt on it from falling on to the wet paint.

To keep paint off the glass, you can if you wish mask up each pane. This is best done with an aluminium or plastic paint shield (fig.13)—obtainable from do-it-yourself shops— or masking tape. If paint still penetrates on to the glass, wait until it is dry then scrape it off with a paint scraper or a sharp knife.

Casement windows, like panel doors, should be painted in a strict sequence (fig.C). Paint in the direction of the grain and use a cutting-in tool, or narrow brush on its side, to cut in where the paint meets the wall and the window pane.

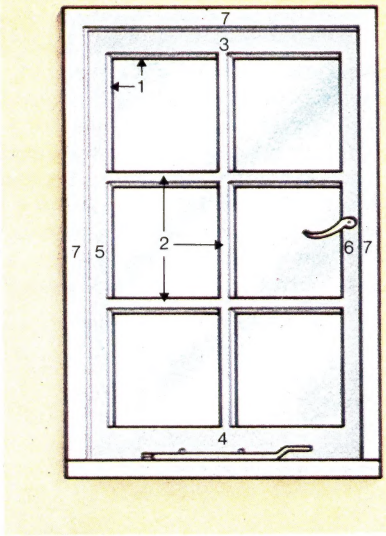
To paint a double-hung window, begin by pulling the bottom sash up and the top sash down to expose the meeting rail. When the bottom parts of the top sash have been painted, almost close the window then paint the remaining areas (fig.D). Finish off in the order shown for casement windows.

For safety at each stage of painting fix the sashes in position with a small wooden wedge. Wait until the paint is quite dry before closing the window or it may stick fast.

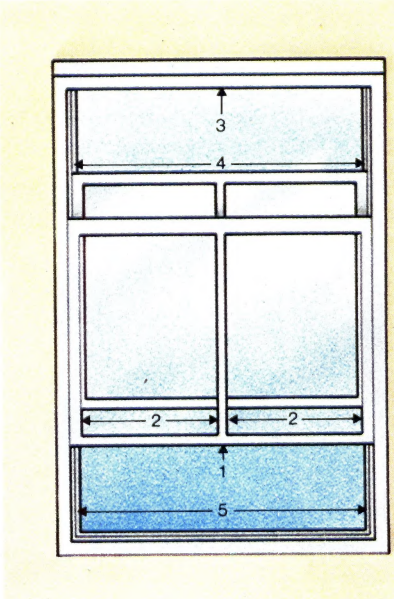
Tip from the trade

Q I have just enamelled an interior door red, and the colour is very patchy. Can I remedy this?

A Only by sanding back and starting again. This time, make your undercoat a colour which is a close match to the desired top coat—either by squeezing a tube of red tint into the undercoat, or by asking the paint merchant to colour it for you. Red, unfortunately, is a very 'tricky' colour for showing patches and blemishes; it is even worse than white.



C. *Casement windows should be painted in a strict sequence. Paint the top and under edges of the frame as well as the visible areas*



D. *The painting sequence for a double hung window. Finish off in the order shown for casement windows*

Dress up your doors

Most people paint their doors in single plain colours. But, with a little imagination and the use of different colours and designs, a dull door can be made to enhance the appearance of a room. On panel doors you can paint the panels and mouldings in different colours or, if preferred in differing shades of the same colour. Stripes and designs can be painted onto flush and panel doors, with the use of masking tape, and extended across the adjacent walls. For a really modern look, try painting a design onto a door that matches, and draws attention to, a nearby picture on the wall.

Even more adventurously, a children's room can be transformed by a cartoon character on the door or, as in the picture below right, occupying a whole wall. Either way, you enlarge the cartoon by dividing it into a grid pattern of tiny squares and the wall into corresponding, larger squares.

Skirting boards can also be painted imaginatively to liven up the look of a room. For instance, if you decide to paint a coloured stripe across or around a door, try painting the skirting board in the same colour or a matching shade. Here are just a few ideas to brighten your home.

Elizabeth Whiting

Above: *Bold, colourful stripes enliven a children's room. Each stripe must be masked off with masking tape and painted separately*

Left: *'Door with a difference' uses strips of the green wallpaper in the middles of the panels, with a border painted to match the bedspread*

Elizabeth Whiting

Below: *A subtler scheme using dark blue, light blue and white to echo the colours of the wallpaper, carpet and furniture*

Camera Press

Below: *Adding adventure to a boys' room, a striking cowboy cartoon panel occupies not just the door, but the whole wall*

Bill McLaughlin

Home designer

Greenhouses and conservatories

Enclosing outdoor space—in the form of either a conservatory or a greenhouse—can make the ideal setting for growing plants or even create an extra room in the house

Elizabeth Whiting

A conservatory is one of the most delightful ways of adding more space to your home. In the picture **left** a space for casual dining has been attached to the exterior of the house. Access is through the living room, but, to make the serving of food convenient, the window has been turned into an open hatch giving a very pleasant view from either side.

Hanging plants and the light coloured cane furnishings add to the bright, cheery atmosphere. In a conservatory it is best to choose light colours to keep the room from becoming dreary on rainy days. Select furniture that can easily be moved from outdoors to indoors. A slate floor (or you could use tiles instead) gives an outdoor feeling to the room and is very resistant to water. Other types of flooring may be spoiled when watering plants or if an overhead panel

breaks during a rainstorm.

The serious plant lover may find in time that the addition of a greenhouse in the back garden is the best place for putting a growing collection of house plants. In the picture **below** tender, flowering potted plants that include pelargoniums and fuchsias give a splash of colour to the garden throughout many months of the year. In the summer you can place them outdoors or bring them inside the house for special occasions.

Perhaps the smallest practical greenhouse is one that is built as an extension to your kitchen window, such as the one in the picture **right.** An array of colourful flowering plants, especially in the winter months, gives you something pleasant to focus on when you are doing the washing up. A small kitchen greenhouse is the ideal spot for growing herbs that will not only add a decorative touch to the kitchen but will provide a convenient means for getting the right ingredients to cook good food.

Exterior walls at right-angles are an

Harry Smith

Elizabeth Whiting

Michael Warren

ideal area to add a conservatory to your house. In the picture at **left** a patio has been converted into a conservatory, but it still retains the feeling of being outdoors.

The warmth created by sunshine, however, means that the patio can be enjoyed for a longer time of the year. It means also that outside walls in the home receive extra insulation especially when, as in the picture, there are several French windows which would otherwise be a source of draughts.

Wrought iron supports are a lovely decorative touch—they were widely used in Victorian times which is when conservatories became common.

The beautiful arched and stained glass windows in the picture **right** give this conservatory its very special quality, and it is greatly enhanced by the row of plants that extend the width of the wall.

Your plants need not take up precious room space in the conservatory. The addition of shelving may be all that is needed for grouping your plants.

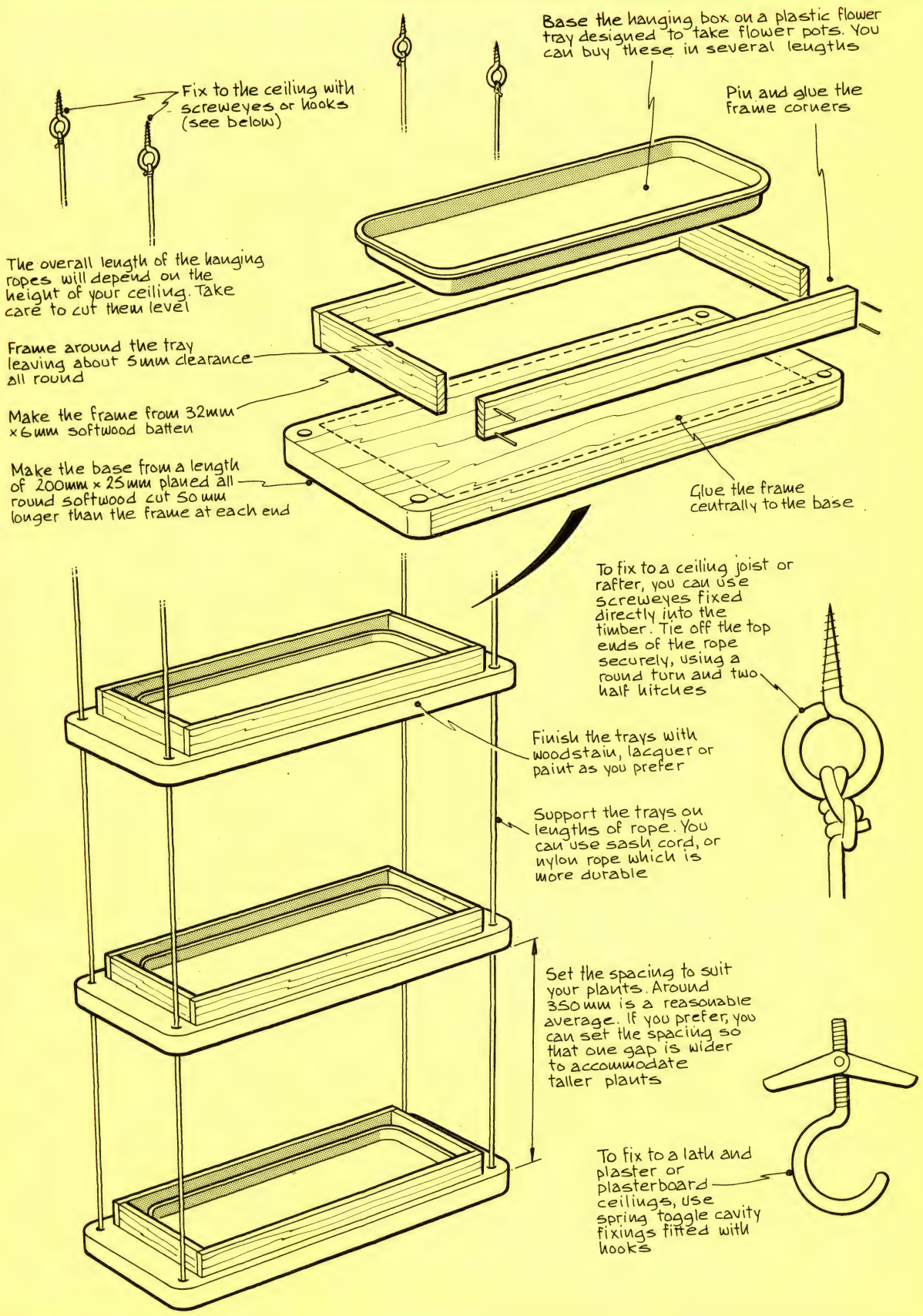
In a conservatory with glazed ceiling panels, protection is often required during periods of the day when there is strong sunlight—otherwise plants could scorch and the room would become unbearably hot. A roller blind such as the one in the

picture **below** will diffuse light coming into the room; bamboo blinds also keep out some sunlight. For a really good screening your best bet is an inexpensive blind of pinoleum—very fine wood strips woven with cotton.

Whether you are thinking of attaching a conservatory to your house or building a greenhouse in your garden, you need not limit yourself to the usual traditional designs. In the picture **left** a very charming greenhouse has been constructed to look like a Victorian gazebo. A number of prefabricated greenhouses exist, which when installed in your garden, will not only be functional but add to its overall appearance. The small greenhouse in the picture left also provides a pretty and tranquil place for sitting and relaxing.

But the important thing to consider when choosing a particular design of greenhouse—or conservatory for that matter—is that it fits in with its surroundings. In this picture natural wood and a geometric shape complement the straight lines of the paving stones and the flower beds. But this formality is well balanced by the more informal layout of the rockery and flowering shrubs.

Bill McLaughlin


Base the hanging box on a plastic flower tray designed to take flower pots. You can buy these in several lengths
Pin and glue the frame corners
Fix to the ceiling with screweyes or hooks (see below)
The overall length of the hanging ropes will depend on the height of your ceiling. Take care to cut them level
Frame around the tray leaving about 5mm clearance all round
Make the frame from 32mm x 6mm softwood batten
Make the base from a length of 200mm x 25mm planed all round softwood cut 50mm longer than the frame at each end
Glue the frame centrally to the base
To fix to a ceiling joist or rafter, you can use screweyes fixed directly into the timber. Tie off the top ends of the rope securely, using a round turn and two half hitches
Finish the trays with woodstain, lacquer or paint as you prefer
Support the trays on lengths of rope. You can use sash cord, or nylon rope which is more durable
Set the spacing to suit your plants. Around 350mm is a reasonable average. If you prefer, you can set the spacing so that one gap is wider to accommodate taller plants
To fix to a lath and plaster or plasterboard ceilings, use spring toggle cavity fixings fitted with hooks

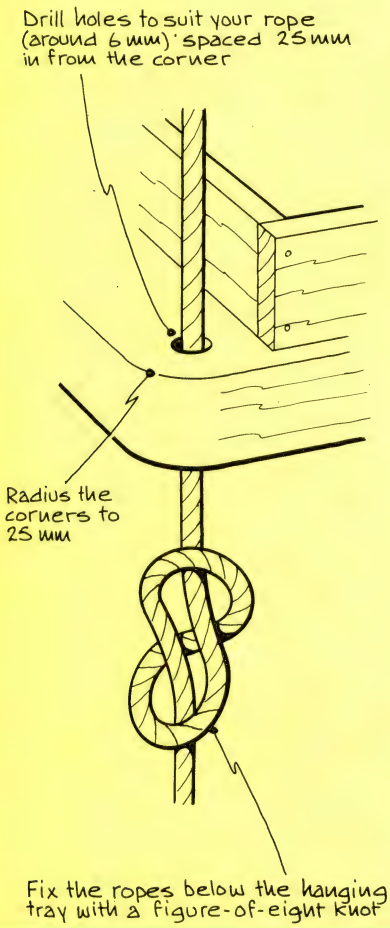
A hanging rack for pot plants

Right: *Each tray in the hanging rack is designed to fit neatly around a plastic flower tray to prevent leaks*
Below right: *The rack will accommodate many plants for a magnificent display on three levels to dress up a window or screen an awkward corner*

Display your plants in this simple-to-build hanging rack. You can hang it across a window where the plants will get plenty of light, or fit it in an out of the way corner. It is ideal for awkward or high ceilings—helping to give the room a more balanced look.

Make each tray in the rack from softwood boards. You can buy plastic flower trays to take the base of your plant pots and prevent drips. Use these to give you the dimensions of the trays. Finish the timber with lacquer to preserve it.

Support the trays on four ropes fixed to hooks or eyes on the ceiling, and tie off under the trays at equal heights. Base their spacing on the plants you want to display.


Drill holes to suit your rope (around 6 mm) spaced 25 mm in from the corner
Radius the corners to 25 mm
Fix the ropes below the hanging tray with a figure-of-eight knot

Martin Palmer

Advertising Arts

Soldering copper pipe

Plumbing jobs that need use of a blowlamp • Using a blowlamp for soldering • Making a capillary joint • Using a swageing tool • Working with stainless-steel piping • Installing an outside tap for the garden

John Ward

Above: *To prevent injury, make sure the blowtorch flame always points away from you and wear gloves*

Pipe bending and the use of capillary joints are important aspects of plumbing and are not complicated skills. But, because they involve using a blowlamp (propane torch), less involved methods of shaping and joining copper pipework are often preferred. These alternatives are sometimes less efficient and always more expensive.

A blowlamp must always be stored in a well-ventilated place and sensible precautions taken when using it. It is particularly important to make sure that the blowlamp is put down on a stable base between stages.

Types of blowlamp

Blowlamps of various types are available. Some of the larger models are intended for professional use while others are capable of light household tasks only. The disposable canister gas torch type is probably the most suitable for occasional home plumbing needs because it is light and cheap. A selection of nozzle fittings increases the range of jobs that can be handled by the blowlamp.

A blowlamp is required for two simple jobs in plumbing: *annealing* and *soldering*. Annealing is the term used to describe the process of heating, then cooling metals to remove brittleness and soften them.

Copper piping can be bent to shape without prior heating and cooling but the job is much more efficiently done if the tubing is first annealed. In the case of copper, this is done by heating the pipework slowly to a dull cherry-red glow and then plunging it in water to cool it rapidly. You need anneal only the section of pipe used to form the bend. If the area to be annealed is in the middle of a long length of pipe, water may be poured over the work to cool it.

Using a blowlamp

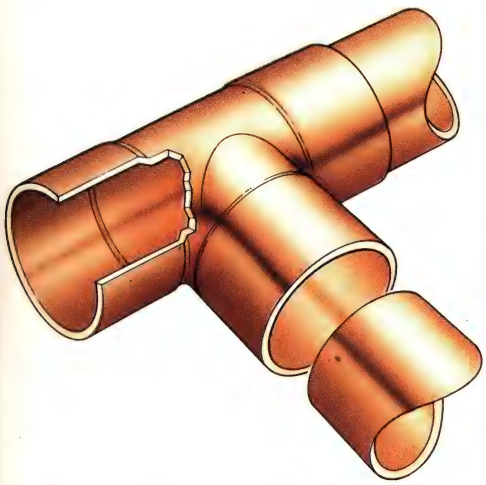
When you can work away from a confined pipe run, do so. The work is much easier. Clamp the workpiece to a workbench, or otherwise support it. Or you may prefer to do the soldering over a blowlamp fixed firmly in a workbench clamp. But you need heavy-duty, heat-resistant gloves for holding the pipework—copper is a particularly good conductor of heat—and you should work with the flame going away from you (see left). One hand can be used to hold and rotate the pipe and fitting and the other used for applying the solder.

Adjust the blowlamp to give a controllable flame, concentrated as finely as possible. This simplifies the soldering operation and minimizes the need for masking behind the area of work. You may often have to use a blowlamp in tight corners, and masking off behind the work area shields the background to the pipework from the flame. You can use a few old ceramic tiles for this. A better solution, however, is to use purpose-made heat-proof material or glass-fibre cloth or matting.

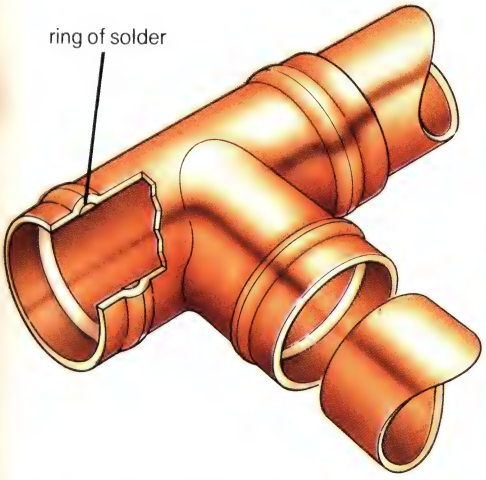
You must avoid running the flame on asbestos-cement or plasterboard (drywall) fixed in place behind pipework—but offcuts of heatproof board may be used as shielding. Great care must also be taken to avoid damaging paintwork or glass close to the work. Blowlamps should not be used on plastic piping.

Some blowlamps have a flame shield accessory that slips in place behind the area of work. Being attached to the blowlamp, this has the advantage of leaving a hand free for soldering. Keeping hands clear of the flame is an obvious precaution all too easily—and painfully—overlooked when working with the near-invisible flame of a blowlamp.

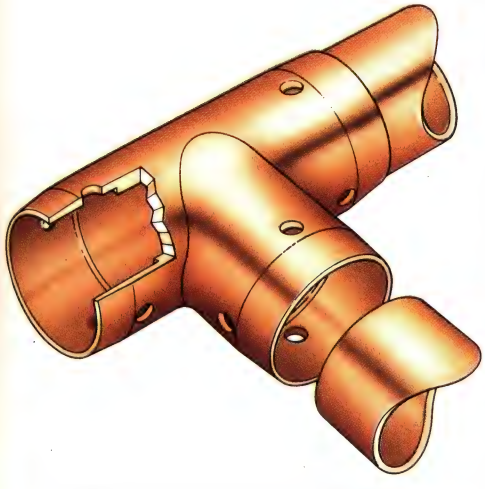
For DIY copper pipe joining, always heat the general area of work with the end flame before coming in with the hottest, central, part of the flame. Play



A. *This is an 'end feed' capillary 'T' joint—a ready made expanded joint*



B. *The common 'pre-soldered' version that requires heating only*



C. *Much rarer is the 'touch feed' type—solder is melted in the hole*

Hayward Art Group

this inner flame on the precise area of the bend or join until the copper is glowing, for annealing, or at the soldering temperature.

In soldering, it is the heated metal that melts the solder—not the blowlamp—so if the solder does not melt, the joint area is not hot enough. In soft-soldering, remove the blowlamp as the solder is melting.

Soldering copper

Soldering is the joining of metal to metal by melting between them a metal alloy. In plumbing, soldering is normally used for pipe joining.

Soldering alloys fall into two groups: soft solders, and hard solders. A simple explanation of the difference is that soft-soldering does not require high melting temperatures, but the use of a 'weaker' alloy for joining means that this method is suitable only for joints subjected to light loads. Nearly all plumbing jobs fall within this category.

Hard solders melt at very high temperatures and, being stronger alloys, are suitable for larger and more loaded joints. In plumbing only heavy-duty pressure pipes are ever likely to require hard-soldering (called 'brazing')—this is a job for a professional plumber.

Very much part of the soldering operation is the application of *flux* to the cleaned surfaces of a joint. Flux is a chemical compound which first cleans the joint surfaces, and then protects these from oxides that form while heating, ensuring a good strong bond of metal and solder. Always use a clean brush or piece of wood or card as a spatula when applying the flux, to prevent skin irritation and mess.

Two basic types of flux are used in soft-soldering applications, and each is available in either liquid or paste form. Both can be used for soft-soldering copper piping joints.

Mild, non-corrosive flux usually employs a resin base. It is particularly suitable where it is not possible to 'clean up' the joint area after soldering, as a non-corrosive residue remains. *Acid corrosive flux* is a more energetic form that rapidly dissolves oxides, but leaves a corrosive residue which must be removed—soapy water and good brushing is normally quite sufficient for this.

For soldering, you can use resin- or acid-cored solder where the flux is contained within the solder wire itself—but only in addition to liquid or paste flux which is spread liberally on the joint surfaces.

Tip from the trade

Q Soldering new pipework seems to be no trouble—until I try to connect it to the existing pipes. Then I find that some of the old soldered joints won't come apart, however much I heat them. Why?

A You probably have water in the pipe below the fitting—even a tiny amount will prevent the copper heating properly. If there is no way of draining down thoroughly, try making your connection at a higher—and drier—point in the pipe run.

Capillary joints

There are three types of capillary fitting. All rely on the same principle—the capillary action which draws the bonding material (molten solder) along the minute gap between the fitting and the pipe between.

In one type, the fitting is pre-soldered and requires little more than heating when joining. You can see the solder ring inside one of these fittings. The other two types require solder to be applied either at the rim edge of the assembled joint or at 'touch holes' in the fitting when the join area is being heated. The capillary action draws in the molten solder, giving the names 'end feed' and 'touch feed' to these types of capillary joint.

The difference between pre-soldered, end-feed and touch-feed capillary joints is slight. You should choose whichever is most convenient. All are relatively inexpensive. Each is available in several forms, although the range is normally restricted to connecting fittings such as bends, tees, reducers, and stop-ends. Capillary fitting bends are frequently used to get round the need to make these in continuous pipe lengths.

Making a capillary joint

Any new pipework is cut and prepared as for a compression joint (see pages 10-14). To make sure of a good solder joint, the pipe ends—both old and new—must be burnished clean, as must the inside contact area of the capillary fitting itself. Fine glasspaper or wire wool can be used for this (fig. 1). Grease can be removed with turps substitute or white spirit.

Assemble the pipe and fitting after

carefully smearing the contact surfaces with flux (fig. 2). Wipe off any excess once the pipe has been bedded in the fitting, otherwise molten solder may run where the flux remains (fig. 3). An internal stop prevents the pipe being pushed inwards too far.

With pre-soldered capillary joints all that is then required is to heat evenly the area of the join with the blowlamp until solder is seen at the rim of the fitting (figs. 4, 5 and 6). With the joint still under heat, try to rock the pipe in its seating. This should not be possible if you are using a correctly matched pipe and fitting, but the action does seem to encourage the capillary action of the solder. Take care not to over-heat the joint area as this could cause the breakdown of the flux, and the solder to blow out of the fitting.

The procedure is slightly different for an end-feed or touch-feed fitting. These should be fluxed and then heated evenly until the copper is hot enough to melt solder wire held against it at the rim of the join or at the touch hole (fig. 8). From time to time, prod the pipe with the solder wire to find out when this soldering temperature is reached (or watch out for vaporizing flux). As the solder wire melts, lead it slowly round the rim—or hold it at the touch holes—until no more molten solder is drawn into the join (fig. 9). Finish off by leaving a ring of solder to act as a seal at the join rim (fig. 10). This additional precaution can be used with pre-soldered capillary joints as well. Remove residual flux when the joint has cooled.

Make quite sure that no movement occurs between the pipe and fitting when the assembly is allowed to cool—any movement then can greatly affect the strength of a solder joint. The tightness of pipe and fitting is usually sufficient to prevent this but, to be sure, scratch or pencil a reference mark on the copper piping when this is fully butted into the fitting, so you can check for later movement (fig. 8). Movement during soldering can be corrected there and then.

With most fittings, you need to make two joins that are quite close together. It is always better to do them both at the same time. If for some reason one of the joins causes problems and continued heating of this is likely to cause the other to melt, wrap a wet cloth round the sound joint to keep its temperature down while you deal with the problem end. Adopt the same procedure if, later, you spot a fault in one or other of the joins, and this needs re-doing.

Suspect a touch-feed join if solder does not run freely into the holes, and remake. Similarly, reject an end-feed join if solder does not disappear into the socket before welling up. Problems with pre-soldered joints are few, but check that the solder has formed a complete ring at the rim.

Making an expanded joint

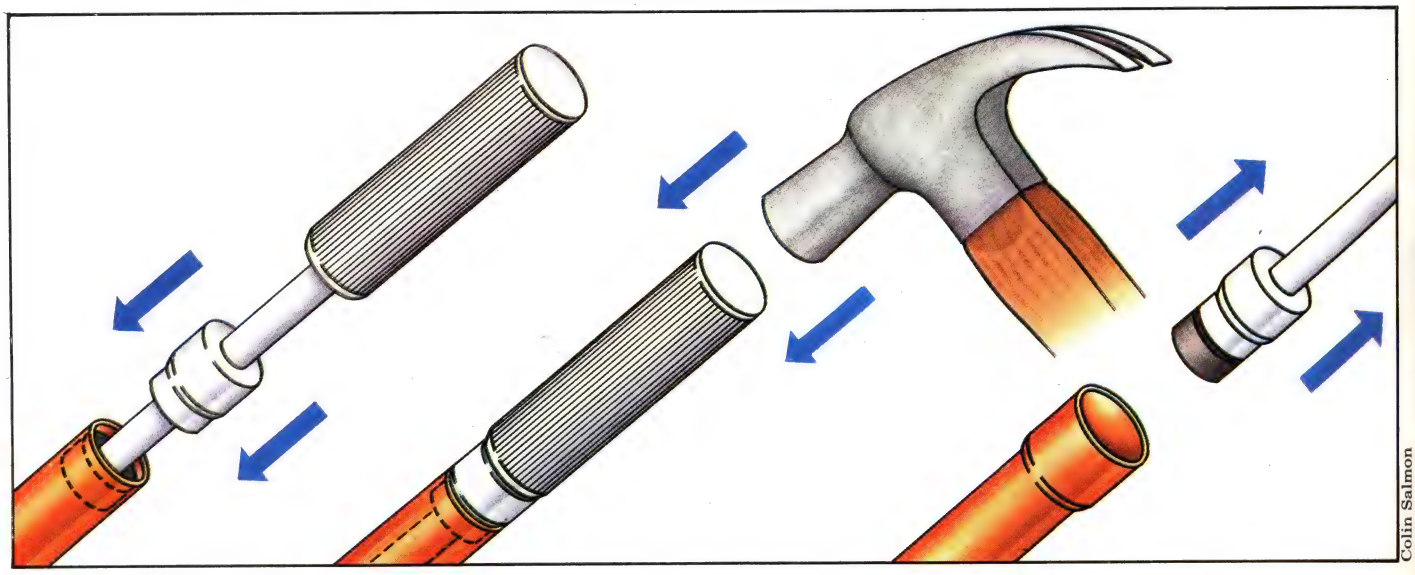
Another method of joining same-size copper piping—and one that makes use of end-feed capillary soldering techniques—is the *expanded joint*. Used mainly for larger bore piping—15mm, 22mm and, possibly, 28mm—the attraction of this joint is its neat appearance, negligible cost and relative convenience. An *expanding tool* or *punch* matching the pipework diameter is an inexpensive requirement. Alternatively, consider hiring a pair of *expanding scissors* if same-size piping in different diameters is to be joined.

John Ward

1 *Burnish the outside of the pipe and the inside of the fitting (here a pre-soldered 'T' joint) to ensure a good solder bond*

The purpose of both types of tool is to 'bell' out the end of one length, enough for the other to socket into place (fig. D). The punch end does this by expanding sideways when struck with a hammer; the scissor-like tool relies on outwards leverage. A centring spindle on the punch—and the shape of the business end of the scissors—keeps the bell shape symmetrical and centred to the pipe. Should you decide to hire such equipment, follow closely the tool's

D. *Using an expanding ('swageing') tool to widen slightly copper pipe used for an expanded joint. The punch is self-locating*



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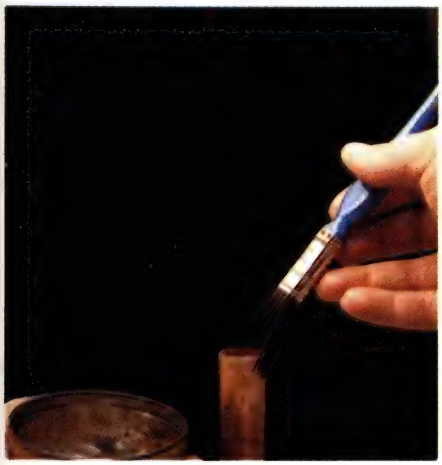
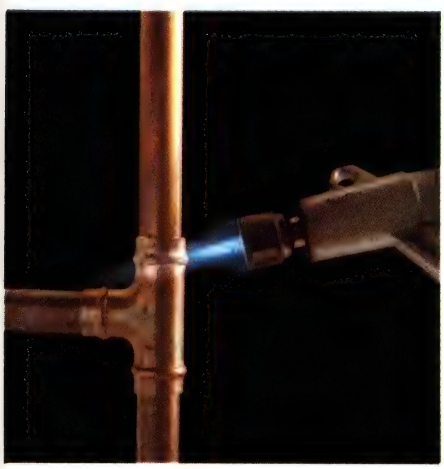


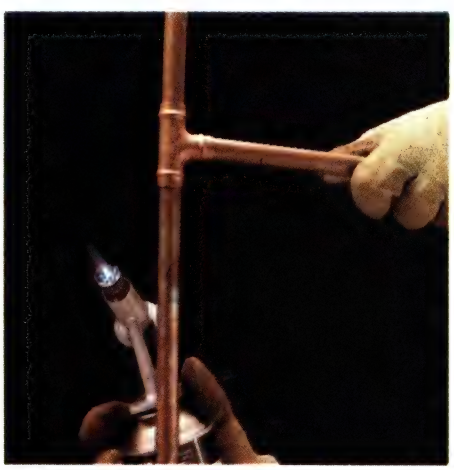
2 *Use a clean brush or spatula to apply flux to the contact surfaces. A mild non-corrosive form is suitable for copper pipework*

3 *Once the pipe has been seated in the fitting, remove any excess flux with a cloth—residue may cause solder streaks and a poor join*

4 *Heat the general area of the joint as a first step. On very large bore fittings this is not normally necessary*



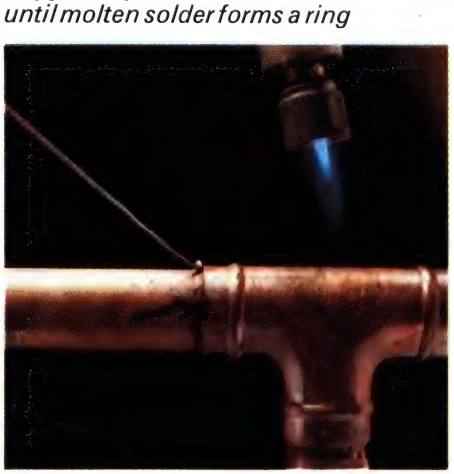
5 *Come in close with the hot central part of the flame—the blue flame on a gas torch—and heat the join area only*



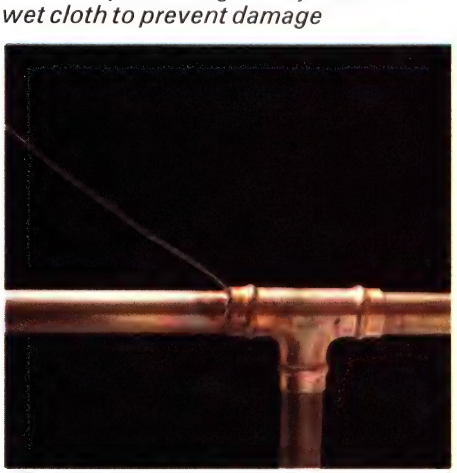
6 *Draw the flame away as the solder begins to melt. Try to wiggle the joint, and reheat this area until molten solder forms a ring*

7 *An incomplete ring at the rim indicates a suspect join. Remelt and rectify, covering other joins with wet cloth to prevent damage*

8 *In the case of an end feed or, as here, an old and cleaned-up pre-solder joint, heat the general area of the fitting. Note the mark to check slip.*



9 *At the correct temperature, solder melts on contact with the metal. Feed solder around the rim until no more is drawn in*



10 *Finish off all joints with an additional ring of solder near the rim edge. For a pre-soldered joint do this as the solder melts*

instructions on use for best results.

If you decide to make expanded joints in preference to capillary or compression connection fittings, spend some time practising on spare bits of piping before making an attempt on the workpiece itself. The most common problems include over-expansion (the other pipe end should fit snugly in place) and splitting (which may be prevented by first annealing the area). Small hairline cracks can sometimes be permitted—make sure that sufficient solder is used to fill these—but a new joint is better.

Always expand an end that has been properly cut and prepared. After expansion, burnish—as best as possible—the inside surface contact area. The normal diameter tubing is bevelled at the edge using a flat file to ensure a good seating, and the outside surface burnished. There should be no play in the fitting.

Carefully apply flux to both the contact surfaces and fit the two pipes together, checking for a firm fit, and then remove excess flux.

As with a standard capillary fitting, heat the join area until the flux starts to vaporize and solder starts to melt when held in contact with the metal. Continue soldering as for an end-feed fitting, checking that sufficient solder is drawn in to the contact area. Allow the joint to cool before checking the strength of the bond, and then remove residue flux.

Working with stainless steel

Stainless steel piping can be used with copper pipework runs, especially on parts of the run on display or in actual use (such as a heated towel rack). It is rarely used as a complete alternative because of its greater cost, but can be recommended for situations where its inherent strength and hardness might pay dividends.

Stainless steel piping is available in all standard sizes for domestic uses and can be cut, prepared and joined in much the same way as for the copper variety.

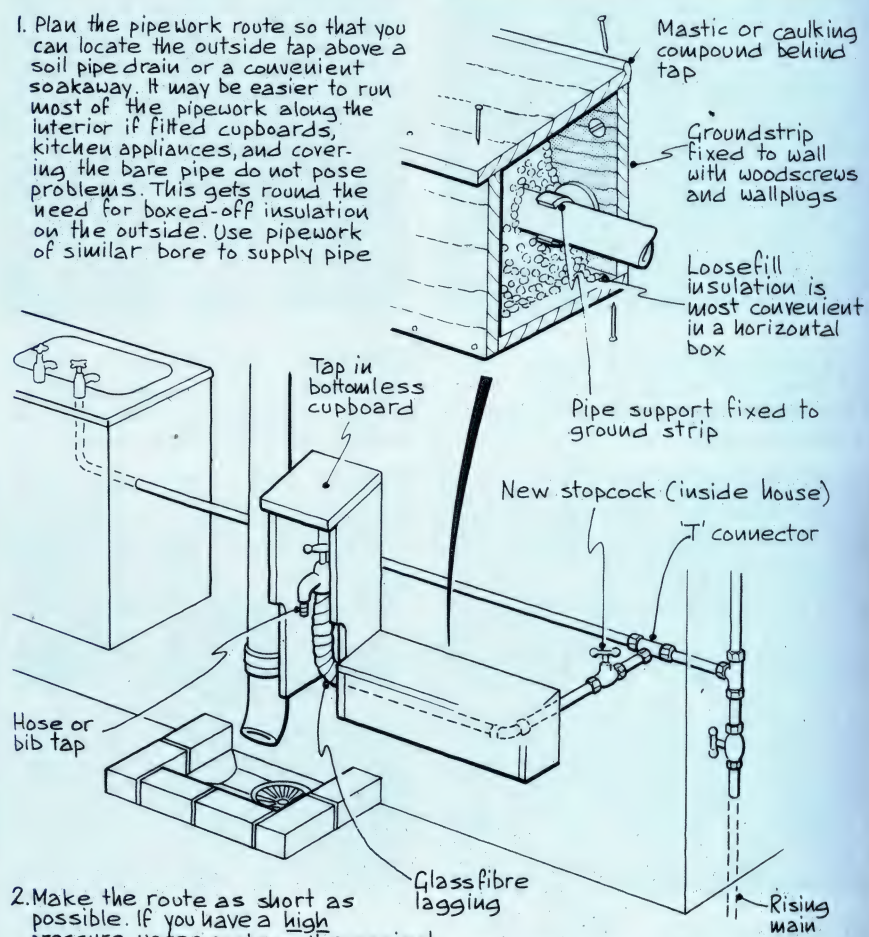
A significant joining difference is that fluxes based on phosphoric acid must be used to offset the high corrosion resistance of stainless steel. These fluxes come in paste form and must be applied with a clean brush or spatula. They are active when soldering temperatures are reached but almost harmless to stainless steel when the joint has cooled. Heat should always be applied to the fitting and not the tube as stainless steel is a poor conductor.

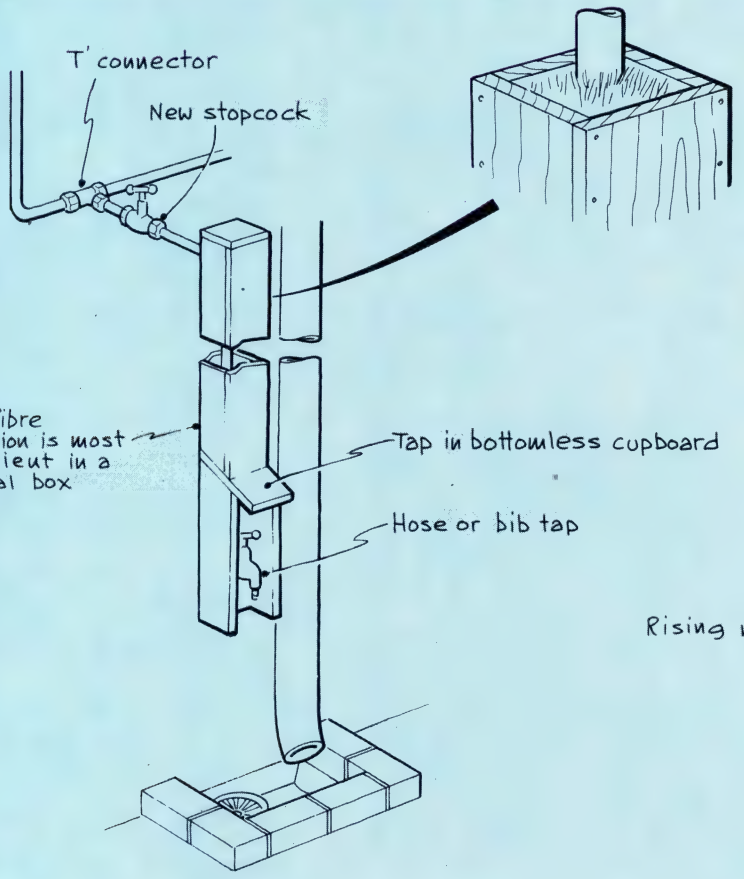
Install an outside tap

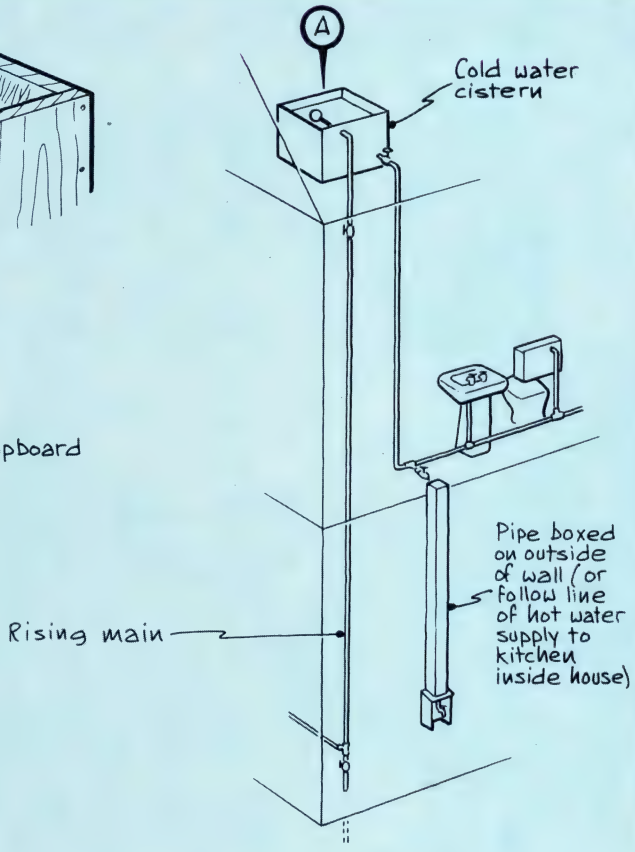
An outdoor tap is an almost indispensible feature of a busy and well-used garden. While it is possible to run a pipe to a central location in the garden, adding an extension to an existing indoor water supply, and running the pipework to a convenient point on the outside wall is usually more convenient and less expensive.

You may need permission from your local water authority to install an outside tap. They can also help you with general questions on the feasibility of your project. (In some installations a low-pressure, gravity feed system may not have enough force to operate a standard hosepipe.)

You could employ a professional to drill and later make good the wall holes but the job is straightforward enough to do yourself if you have the right tools.

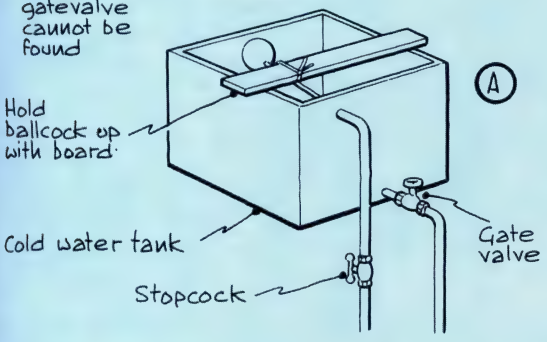

1. Plan the pipework route so that you can locate the outside tap above a soil pipe drain or a convenient soakaway. It may be easier to run most of the pipework along the interior if fitted cupboards, kitchen appliances, and covering the bare pipe do not pose problems. This gets round the need for boxed-off insulation on the outside. Use pipework of similar bore to supply pipe
Mastic or caulking compound behind tap
Groundstrip fixed to wall with woodscrews and wallplugs
Loosefill insulation is most convenient in a horizontal box
Pipe support fixed to ground strip
Tap in bottomless cupboard
New stopcock (inside house)
'T' connector
Hose or bib tap
Glassfibre lagging
Rising main
2. Make the route as short as possible. If you have a high pressure water system, the easiest place to install an outside tap is straight outside the kitchen sink, if possible draining into the same gulley as the sink


T' connector
New stopcock
Glassfibre insulation is most convenient in a vertical box
Tap in bottomless cupboard
Hose or bib tap



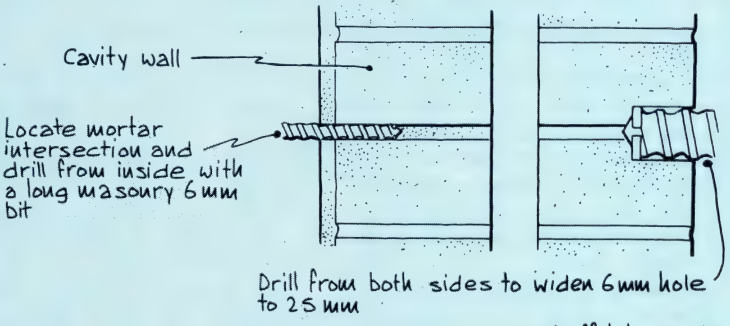
3. If you have a low-pressure system, check with the water authority whether you can interrupt the rising main (high-pressure supply). If not you will have to interrupt the low-pressure supply, probably in the bathroom

4. Locate and turn off water supply. If you are tapping a low pressure system, tie the water tank ballcock up and drain the tank by running the bathroom cold tap if a stopcock and gatevalve cannot be found

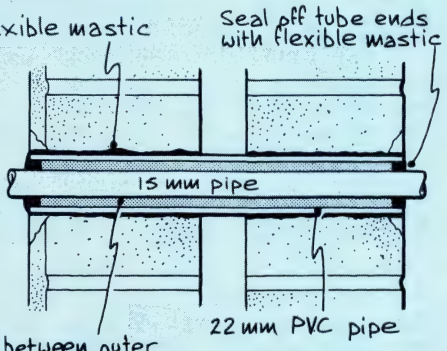


5. When the water supply has been turned off remove a small length of the cold water supply pipe to match fitted length of 'T' connector compression joint (use capillary joint if blowlamp use is not dangerous). A stopcock should be fitted on the new pipework

6. From the inside drill a 6mm pilot hole using a power drill and a long masonry bit. When the hole has breached the outer wall, widen the gap to 25mm using drill, masonry chisel or star chisel


Cavity wall
Locate mortar intersection and drill from inside with a long masonry 6mm bit
Drill from both sides to widen 6mm hole to 25 mm

7. Use a larger bore tube (PVC) to act as a duct for the garden pipe. Seat this in a bed of flexible mastic and make good damage at wall surface using cement or filler. Tightly insulate the garden pipe to prevent draughts



Insulation stuffed into place between outer and inner pipes, and sealed each end by a ring of mastic

Advertising Arts

Skirting trouble

Gavin Cochrane

The purpose of skirting boards is twofold. They serve as a protective buffer at the base of walls, preserving the wall finish from abrasion, and they also act as a decorative feature

Skirting boards (baseboards) can be fixed to a wall in several ways. In timber-frame construction, they are simply nailed through the plasterboard (drywall) and into the studs, or vertical timbers, behind.

In masonry walls, nails can be hammered at an angle through the board and its backing of plaster into the brickwork (fig. A). Alternatively, strips of wood called grounds can be used. These are firmly attached to the wall and act as a fixing base for skirting boards placed over them. A continuous strip is supported at intervals by small upright pieces called soldiers (fig. B).

With either system, some plaster damage must be expected as the old skirtings are removed, and usually needs to be made good with plaster or filler before new boards are fixed.

In rare instances, the skirting is fixed to wedge-shaped uprights bedded into cavities in the brickwork (fig. C). Installed at the time the wall was made, these are held in place by a mortar filling which often decays over a period of time. Excessive force on the skirting—such as that required to remove it—is often sufficient to dislodge these uprights. If this happens, mortar them back in. A new upright can be made by tapering a suitable length of batten.

The golden rule to bear in mind when dealing with skirting board is to be careful. The bedding plaster is easily chipped by a casual knock.

Removing and replacing boards

To remove a length of skirting, start at one of the corners and place a bolster on the top edge where the skirting meets the wall. Using a claw hammer, hammer the bolster gently down. This will prise the skirting away from the wall at that point. Continue this action along the length of skirting to be removed. Where greater resistance is met, the skirting is nailed to the wall.

With the top edge prised away from the wall you can start to remove the skirting completely. For this you need a claw hammer and a small, thin piece of plywood or hardboard to protect the wall finish. Place the claw of the hammer down behind the top edge of the board and slip the timber between the claw and the wall. Lever gently upwards on the handle, pressing the hammer head against the timber. This forces the board further away from the wall and draws out the nails at the same time.

Always use timber or a piece of hardboard to protect the wall or the hammer may leave an indent. Do not use a crowbar as this can damage the wall plaster.

Once the skirting is removed the nails should be pulled out. Use a pair of pincers to draw out the nails from the back of the board. This keeps the paint surface intact, as the face of the board often splinters if the nails are hammered through and drawn out from the front.

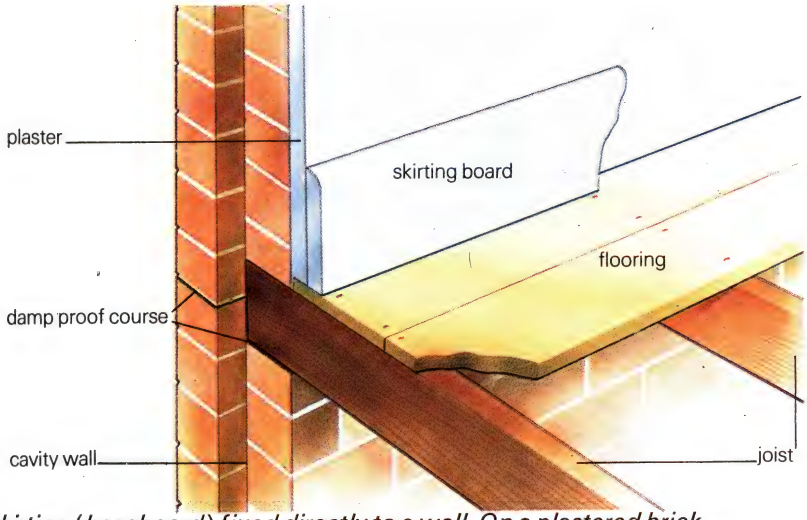
Partial removal of skirting

When the area of damaged or decayed skirting is relatively small, partial replacement is more economical. Measure the length of board to be replaced and buy or make a new piece to match.

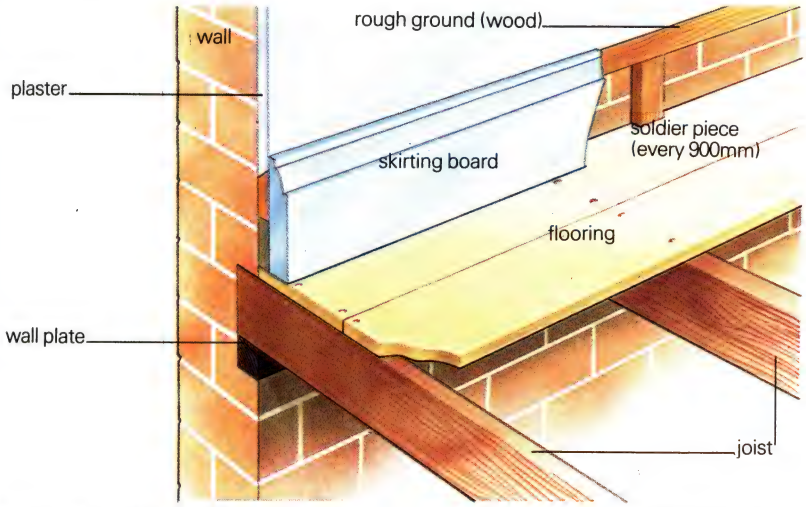
First, prise the damaged part of the board away from the wall with a bolster (fig. 1). With the top edge free, you can now insert a timber wedge between the board and the wall at the place where the first cut is to be made. The wedge should have one sloping face and be thick enough to push the board out by about 40mm. Position the wedge with the flat face to the wall so that as you hammer it down, the sloping face pushes the skirting away from the wall.

To cut out the damaged length of board, make a mitred cut at each end using a mitre block or box. There are no set rules for positioning the direction of the mitres: they can be parallel or face in opposite directions, and lean inwards or outwards.

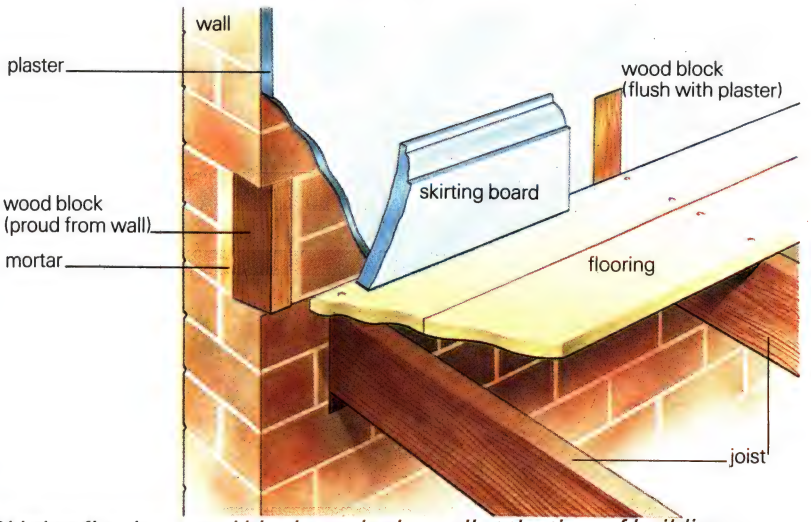
Position the mitre block with its back against the face of the skirting and the top level with, or above the top of the skirting. If necessary, put



A. *Skirting (baseboard) fixed directly to a wall. On a plastered brick wall, plaster damage usually accompanies the skirting board's removal, especially if the nails securing the board have rusted*



B. *Skirting fixed to a rough ground supported clear of the floor. Board removal may cause partial collapse of the ground and plaster base it supports*



Nick Mynheer

C. *Skirting fixed to wood blocks set in the wall at the time of building. Retaining mortar may have decayed, and both this and damp soldiers have to be made good before replacing skirting*

some suitable packing material under the block to raise it to this level. Make the first cut at the end of the damaged area using a panel saw in short rapid strokes (fig. 6). Only the first few teeth of the saw are used so these teeth must be sharp.

Continue the rapid strokes until the teeth of the saw reach the base of the block. Remove the block in order to complete the cutting down to the floor, taking great care to maintain the straight line of the cut. Pull out the wedge and reposition it where the second cut is to be made at the other end of the damaged piece of skirting. The second cut is made in the same way. Once free, lift out the piece of board from the skirting.

Fitting the replacement board

Using the mitre block, cut a mitre at one end of the new board. Make sure that the direction of the cut is the same as that of the first cut, made when removing the damaged piece. After cutting the mitre, measure the inside edge of the area to be fitted with new skirting and transfer the measurement to the replacement board. Use the mitre block again to cut the second mitre. Check that the direction of the cut matches that in the skirting. Fit the replacement piece in the gap to check its compatability. If adjustment is necessary, use a plane with the blade set finely and remove a few shavings from the end grain.

Fixing the replacement board

An easy method of fixing the new length of board is to use 38mm oval pins and skew nail them through the mitre joints. This way, you will nail through both thicknesses of skirting. Punch the nail heads below the surface and make good the indentations with a little woodworking filler.

Alternatively, you can use masonry nails to fix the skirting into the brickwork behind. In this case, a piece of timber the same thickness as the plaster should be placed behind to overlap the old and new pieces of skirting at each end. This ensures that the skirting will not be pushed out of its vertical position should it be knocked at the bottom.

Matching new skirting to old

New houses usually have one of the following types of skirting: pencil round, splayed, splayed-and-rounded, or chamfered. These are easier to obtain than the elaborate older boards but fill-in pieces can be made from a square-edged board.

1 *Place a bolster behind the top edge of the skirting board. Hammer the bolster down gently. Repeat along the length of skirting*

2 *Place the claw of the hammer behind the skirting and slip the protective board between it and the wall. Lever the board away*

3 *If a board proves particularly stubborn, hammer a row of wedges down behind it. This reduces the risk of splitting the board*

4 *When the whole length of skirting has been levered from the wall, draw out the nails from the board using a pair of pincers*

5 *If a damaged length is to be removed, first drive in a wedge, then place a mitre block against the skirting while you start your cut*

6 *Now continue the cut to the bottom of the board, having first ruled a vertical pencil line to help keep the cut straight*

7 *You may have to match new board to old skirting. For a 'pencil round' mark a line 6mm from the front top edge and plane it round*

8 *For splayed skirting, mark the desired thickness on the top of the board and the end of the incline on the face. Then plane down*

9 *For splayed and rounded skirting, mark off the top of the board as for a pencil round and plane and sand the edge*

10 *For an angled board, mark the correct thickness on the top of the board and the angle required on both the end grains. Plane down*

11 *A variety of skirting styles can be manufactured from ordinary board or from a combination of board and moulding*

12 *To join a new section part-way along a wall, first measure the length you need and mark it on the back of the replacement board*

13 *Next, mark a mitre across the top of the board, joining this mark to the one on the back. Make sure the mitre slopes the right way*

14 *Cut through the board to form the mitre—either 'free-hand', as here, or using a mitre box or mitre block. A true cut is essential*

15 *Position the board to check for fit, remembering to remove bits of plaster or other obstructions. If necessary, trim it with the plane*

16 *Nail the board into place once a fitting check has been made. Use suitable filler to conceal the nail holes you have drilled*

17 *Another technique of fitting boards is to drill a well for the nail head and then fill this with filler after the nail has been hammered in*

18 *The completed section should join inconspicuously with existing skirting if the job of matching and fitting has been properly done*

Gavin Cochrane

Tip from the trade

Q My Victorian house has very elaborate skirting boards, and I cannot match them anywhere—not even at a demolition yard. What is the way round this problem?

A You can make up many types of moulded skirting by gluing lengths of wood architrave (of which a good timber merchant should have a wide range) on top of a square-edged board. If this fails, you could ask a small joinery shop to make you new skirtings to match your old ones, using a short length of an old one as a pattern. But setting up the tooling is expensive, so this course is worth while only if you have several lengths to replace.

For pencil round skirting, for example, mark a line along the face of a square-edge board, about 6mm down from what will in effect be the top leading edge. Carefully round this edge as you plane down to the 6mm mark. It helps to start with the plane level, at the top, curving round the edge as you plane down the edge along its length.

Splayed skirting—where the face of the board is sloped slightly upwards—is almost as straightforward. Mark the desired thickness at the top, and where you want the face to end. Then plane down between these two lines.

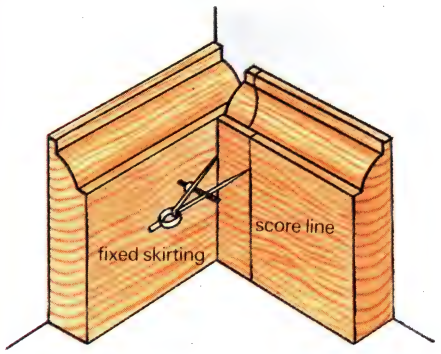
Skirting a room

Skirting a whole room is in many ways much easier than repairing existing skirtings. You do not have the problem of matching new skirting to old and, as skirting can be purchased in full lengths to suit room walls, you will have no joints to make in the length of the boards.

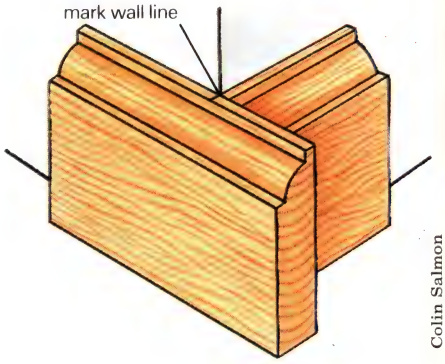
The one rule when skirting a room is that external corners have a mitred joint and internal corners have a scribed one. Apart from that, it is sensible to work round the room in rotation. Doing this gives you a scribed cut at one end of a board. The other end will be either square cut (for another scribed joint) or mitred, depending on whether the board meets another internal or external corner.

When using masonry nails always wear plastic goggles as the nails are brittle and are inclined to break off if they meet resistance in the brickwork.

Dealing with corners



D. *Dividers can scribe complex shapes of moulding to a new board*



Colin Salmon

E. *Scribing the mitre joint when finishing an external corner*

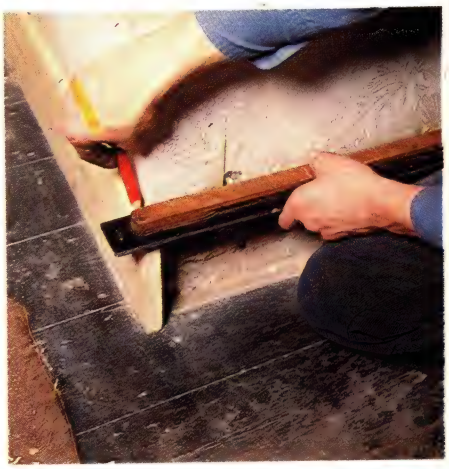
External corners

Mitred joints pose no problem if made carefully with a cutting guide such as a mitre block. However, once placed against the wall, the inevitable irregularities in the plaster may cause a few small gaps to develop. Fill these with filler paste: when dry and decorated they will not show.

If you can, make these mitred cuts with a mitre box and panel saw. If not, use a jig saw. First, mark a piece of board to length and cut it 50mm oversize (fig. E). Hold it in place against the wall and carefully mark the inner measurement of the mitre joint. To do this, hold a try square at right angles to the board and close against the other wall. Add the width of the board to this measurement and mark off, continuing the line down the face of the board.

Set the sole plate on the jig saw to an angle of 45 degrees. Instructions for this accompany the different makes of saw. Cramp the board firmly—face upwards—and set the jig saw blade against the pencil line. Mark on the board the right-hand edge of the jig saw sole plate and extend this line across the board. Measure the gap between the lines at both ends to check that the line is straight. Take a small timber offcut and put it on this line, holding it firmly in place with a cramp. This provides a straight and secure edge against which to press the sole plate. Saw across the board keeping the plate pressed closely against the offcut and the result will be a perfectly cut mitre.

Cut a second mitre on the adjoining length of board, using the jigsaw in exactly the same way.



19 *For an external corner, hold the board against the wall and mark in pencil the end of the wall with a straightedge (see also fig. E)*

20 *Add to this the thickness of the board. Draw a line across the face. Set the jigsaw blade to the width of the sole plate*

Now position the first length of board against the wall and measure from the tip of the mitre to the wall to determine the exact length. Transfer this measurement to the board and cut a square edge for the butt joint with a panel saw.

Before nailing the skirting to the wall, a replacement ground must be fitted if the old one is no longer intact or has rotted. Use masonry nails to fix the grounds into the brickwork, below the plaster (see fig. B). Mark the position of the soldiers on the floorboard below, so that you know where to nail when the skirting board has covered them. Use nails to fix the skirting to the ground support and punch the heads below the surface so that they can be filled over.

Internal corners

A scribed joint is used on internal angles. You cut one board to length with a square end, then cut the second to a shape that fits against the curved or moulded end of the first board. This joint is used because, unlike a mitre, it cannot open up—leaving a gap between the boards—as you nail the skirtings to the walls.

There are two ways of obtaining the scribed shape on the second board. One is to use a pair of dividers to trace the profile of one board onto the other. Then you cut out this profile with a coping saw, keyhole saw or jigsaw.

A better way is to start by fixing the first board (the square-ended one) in place. Then, on the second board, you cut a mitre. This leaves a profiled outline on the surface of the board. So you cramp the board firmly and cut around this outline—at right angles to the board's surface—with your coping saw, keyhole saw or jigsaw. The process is easier to do than to describe or illustrate, but if you practise on an offcut first you will soon get the hang of it.

However you fix the skirting to the wall or ground, make sure the board is firmly in place—particularly where knocks are common, such as near doorways, sockets and external corners that are always in an exposed position. A firm fixing can prevent considerable additional damage to plaster and grounds that ought really to have been replaced long before they work loose.

21 *Cramp an offcut to this mark and set the saw blade to 45° Saw along the pencil line pressing the sole plate firmly against the offcut*

22 *Fix this board to the wall with masonry nails. Take care when hammering to avoid brickwork or plaster damage beneath*

23 *Cut a mitre on a second length of board. Measure off and cut to length, leaving a square end to go into the inside corner*

24 *Using a keyhole saw, cut along the outline on the face of the board which has been displayed by cutting the mitre first*

25 *Join the two boards with two or three nails, nailing through one mitred edge into the other. Punch the nail heads down*

26 *Measure and cut the board to length to fit over the square end of the previous length of board. To get a perfect fit, tap it down*

Gavin Cochrane

Project

A sideboard with style

Frederick Mancini

This highly practical sideboard is finished in black with a solid hardwood frame to lend a touch of real style. Construction is much simpler than it looks, and the result will be a satisfying addition to your furnishings

The basis of this sideboard is a strong, box construction carcase, made from veneered chipboard or plywood to keep the job of building it simple. But in style it looks like a very much more complicated framed structure. This is achieved by giving the chipboard a solid hardwood edging, which also strengthens it and gives a neat finish to the sideboard.

Begin by cutting all the chipboard or plywood panels to the size specified in the drawings. Use a board veneered in a fine-grained timber, free of knots, to which you can give an attractive finish with wood stain. Edge the panels with strips of ramin or a similar hardwood, joined with a loose tongue or dowels.

Assemble the two drawer frames and fit them between the middle panels. Now fit all the other vertical panels to the base and top using dowel joints or plastic corner blocks. Add the drawer runners and the back panel to complete the carcase.

Hang the doors at each side, and fit the optional shelf in each cupboard if desired. Make up the drawers, checking each for fit in its slot. Assemble the hardwood end frames and screw them to the carcase.

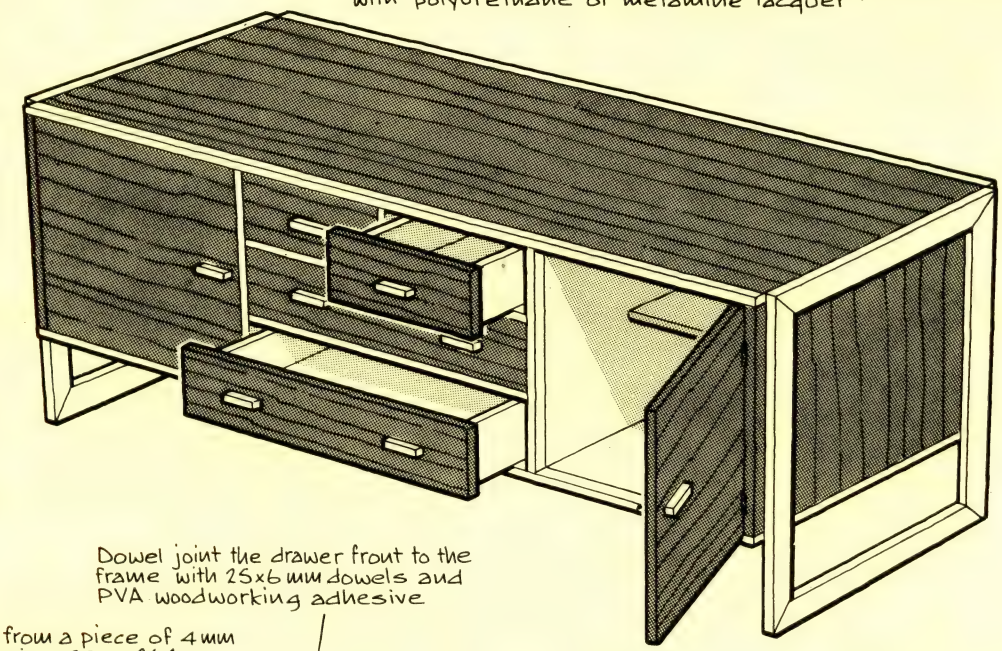
Use a black wood stain to bring out the 'frame'. You can prevent the stain affecting the hardwood by lacquering it first. Stain all the veneered boards, then add door pulls and finish throughout with lacquer or semi-gloss polyurethane varnish.

Workplan

Although the sideboard has a framed furniture appearance, the carcase is actually a simple box construction using veneered chipboard panels. These are edged in solid hardwood to give strength and provide the framed look.

The carcase is supported by two sturdy frames fixed on each end. Use 16 mm pine veneered chipboard for the basic construction and edge it with ramin as shown in the drawings. Cover the remaining cut ends of the chipboard panels, such as on the doors, with iron-on edging strip to match the veneer.

You can emphasize the framing by staining the veneer a dark colour using woodstain. Finish the entire piece by lacquering with polyurethane or melamine lacquer



Dowel joint the drawer front to the frame with 25×6 mm dowels and PVA woodworking adhesive

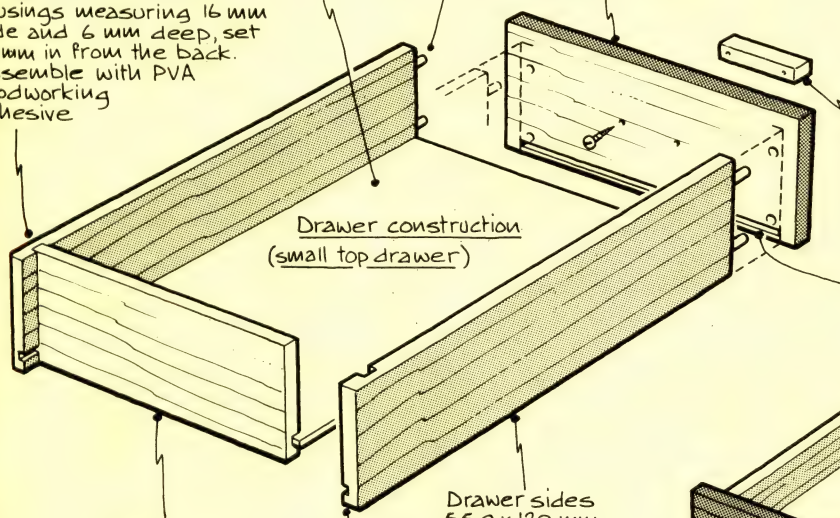
Make the base from a piece of 4 mm plywood measuring 530× 264 mm, glued into the groove all round with PVA woodworking adhesive

Small drawer fronts 309 × 125 mm from 16 mm veneered chipboard

Fit the drawer back into housings measuring 16 mm wide and 6 mm deep, set 25 mm in from the back. Assemble with PVA woodworking adhesive

N.B. Drawer front dimensions include edging veneer. To ensure a good, but not tight fit, check each individually against the drawer opening and plane to fit as necessary

Make the handle from a 75 mm length of 22×16 mm ramin. Sand all the edges smooth and attach to the drawer front with two 25 mm No.8 (4·2 mm) domed head woodscrews



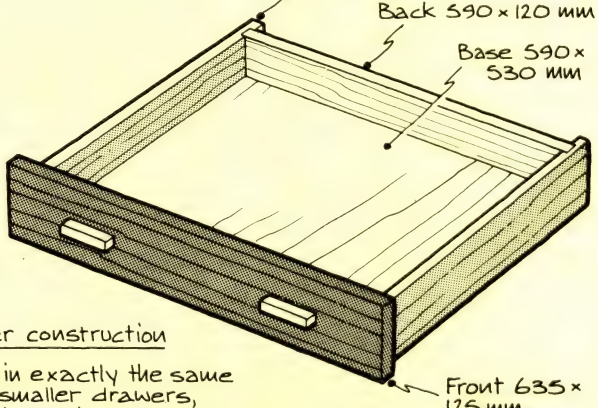
Drawer construction
(small top drawer)

Groove

Sides 559 × 120 mm

Back 590 × 120 mm

Base 590 × 530 mm



Drawer back 264× 120 mm from 16 mm veneered chipboard

Drawer sides 559 × 120 mm from 16 mm veneered chipboard

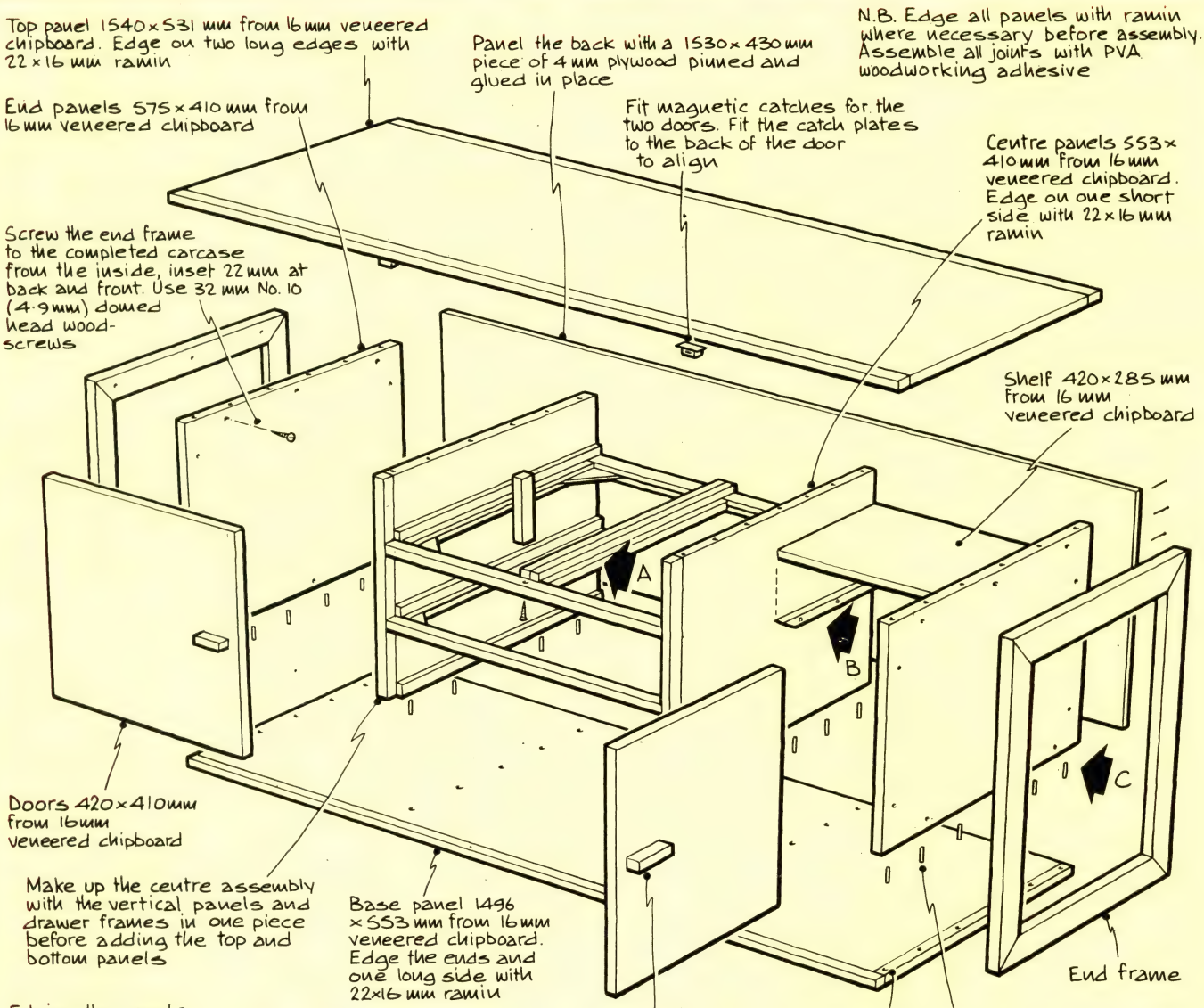
Use a router, plough plane or wobble saw to groove the frame all round with a 4 mm groove, 6 mm deep, set 6 mm up from the bottom edge. Assemble the drawer fitting the base into this groove

Large drawer construction

Make these in exactly the same way as the smaller drawers, using the dimensions given

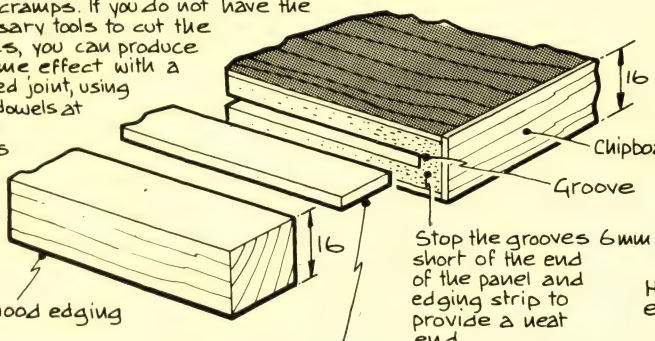
Front 635 × 125 mm

Advertising Arts

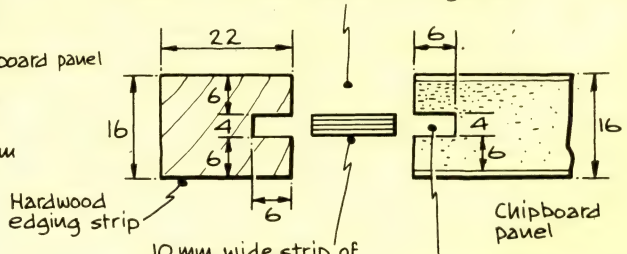

Top panel 1540 x 531 mm from 16 mm veneered chipboard. Edge on two long edges with 22 x 16 mm ramin
End panels 575 x 410 mm from 16 mm veneered chipboard
Panel the back with a 1530 x 430 mm piece of 4 mm plywood pinned and glued in place
Fit magnetic catches for the two doors. Fit the catch plates to the back of the door to align
N.B. Edge all panels with ramin where necessary before assembly. Assemble all joints with PVA woodworking adhesive
Centre panels 553 x 410 mm from 16 mm veneered chipboard. Edge on one short side with 22 x 16 mm ramin
Screw the end frame to the completed carcase from the inside, inset 22 mm at back and front. Use 32 mm No. 10 (4·9 mm) domed head wood-screws
Shelf 420 x 285 mm from 16 mm veneered chipboard
A
B
C
Doors 420 x 410 mm from 16 mm veneered chipboard
Make up the centre assembly with the vertical panels and drawer frames in one piece before adding the top and bottom panels
Base panel 1496 x 553 mm from 16 mm veneered chipboard. Edge the ends and one long side with 22 x 16 mm ramin
End frame
Door pulls from a 75 mm length of 22 x 16 mm ramin set 50 mm in from the edge on the centre line
Dowel joint all the panels together with 25 x 6 mm dowels at 150 mm centres
Dowel joints at end base are into the ramin edging

Edging the panels

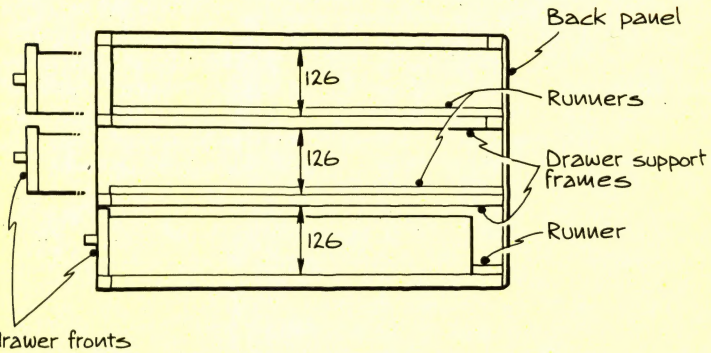
Finish the two central dividing panels, the top and the bottom panels with a solid hardwood edging to provide the framed effect. The neatest way to do this is shown below. Use a loose tongue made from thin plywood, set into grooves machined in the chipboard and the facing strip. Glue the entire assembly together with PVA woodworking adhesive and sash cramps. If you do not have the necessary tools to cut the grooves, you can produce the same effect with a dowelled joint, using 6 mm dowels at 100 mm centres


16
Chipboard panel
Groove
16
Hardwood edging strip
Stop the grooves 6 mm short of the end of the panel and edging strip to provide a neat end
Strip of 4 mm plywood, 10 mm wide used as a loose tongue

Assemble the joint with PVA woodworking adhesive in both grooves and use sash cramps to draw the parts together



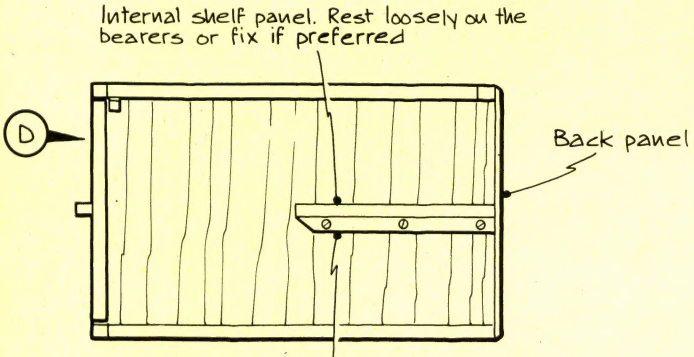
Section of drawer fittings looking on arrow 'A'



All drawer fronts 125 mm deep

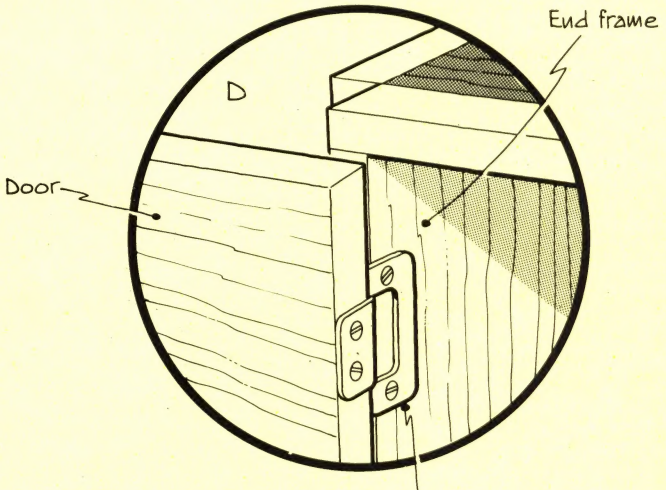
Frederick Mancini

Cross section of shelf fixing looking on arrow 'B'



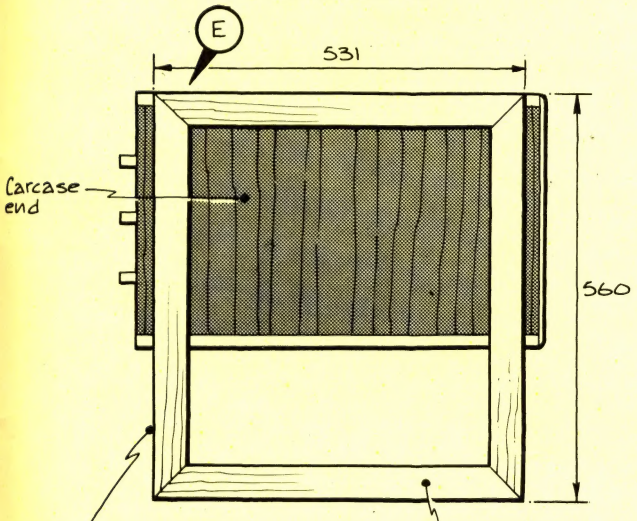
Shelf bearer from 19×12 mm hardwood 285 mm long glued and screwed in place with PVA woodworking adhesive and 25 mm No.6 (3·6 mm) countersunk chipboard screws

Detail of door fitting



Brass flush hinge screwed in place with 12 mm No.6 (3·6 mm) countersunk chipboard screws

View on arrow 'C'



End frame sides 560 mm long from 50×25 mm ramin

End frame base and top 531 mm long from 50×25 mm ramin

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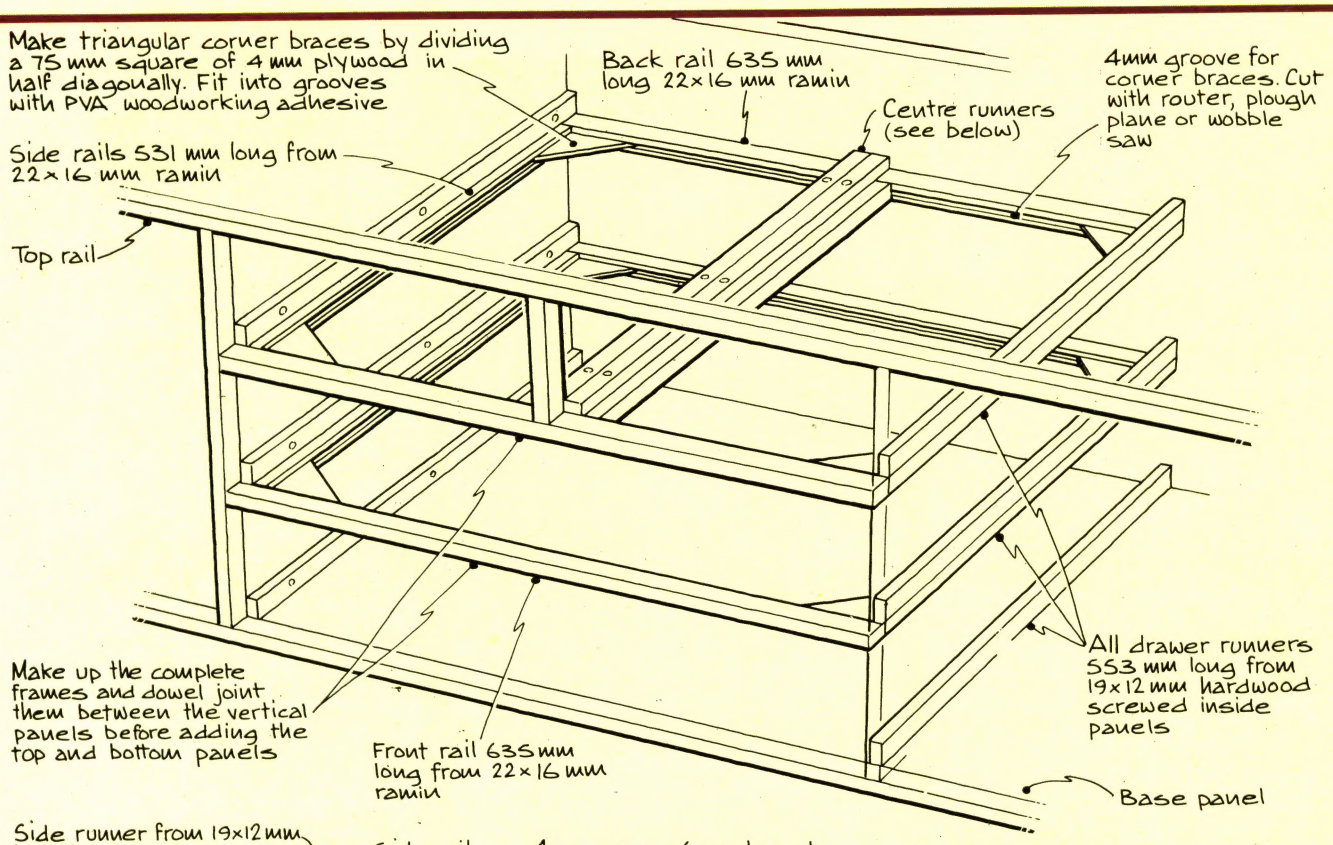
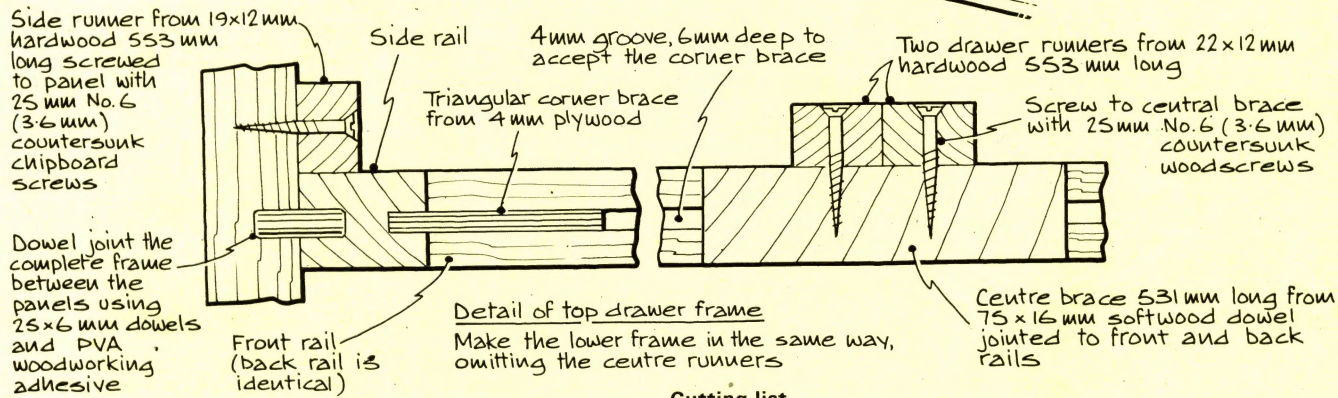
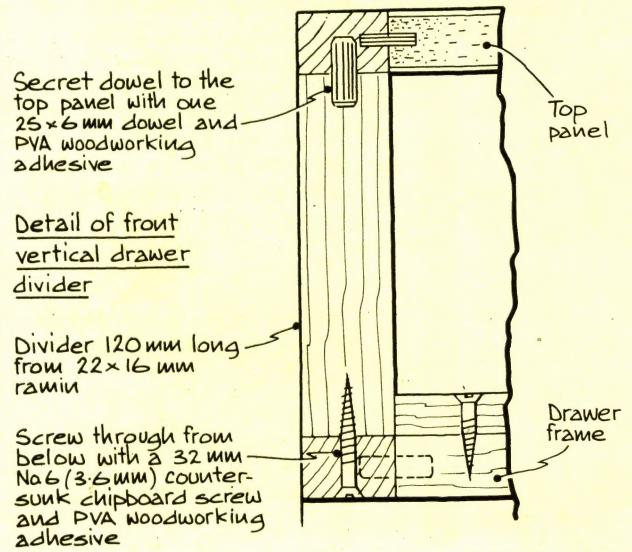

Make triangular corner braces by dividing a 75 mm square of 4 mm plywood in half diagonally. Fit into grooves with PVA woodworking adhesive
Back rail 635 mm long 22×16 mm ramin
Centre runners (see below)
4mm groove for corner braces. Cut with router, plough plane or wobble saw
Side rails 531 mm long from 22×16 mm ramin
Top rail
All drawer runners 553 mm long from 19×12 mm hardwood screwed inside panels
Make up the complete frames and dowel joint them between the vertical panels before adding the top and bottom panels
Front rail 635 mm long from 22×16 mm ramin
Base panel


Side runner from 19×12 mm hardwood 553 mm long screwed to panel with 25 mm No. 6 (3·6 mm) countersunk chipboard screws
Side rail
4mm groove, 6mm deep to accept the corner brace
Two drawer runners from 22×12 mm hardwood 553 mm long
Triangular corner brace from 4 mm plywood
Screw to central brace with 25 mm No. 6 (3·6 mm) countersunk woodscrews
Dowel joint the complete frame between the panels using 25×6 mm dowels and PVA woodworking adhesive
Front rail (back rail is identical)
Detail of top drawer frame
Make the lower frame in the same way, omitting the centre runners
Centre brace 531 mm long from 75×16 mm softwood dowel jointed to front and back rails


Secret dowel to the top panel with one 25×6 mm dowel and PVA woodworking adhesive
Top panel
Detail of front vertical drawer divider
Divider 120 mm long from 22×16 mm ramin
Drawer frame
Screw through from below with a 32 mm No 6 (3·6 mm) countersunk chipboard screw and PVA woodworking adhesive

Cutting list

All sizes are in millimetres. Hardwood sizes are for finished timber. Chipboard is finished in wood veneer.

Part	Material	No.	Size
top panel	16mm chipboard	1	1540mm × 531mm
bottom panel	16mm chipboard	1	1496mm × 553mm
end panels	16mm chipboard	2	575mm × 410mm
centre panels	16mm chipboard	2	553mm × 410mm
doors	16mm chipboard	2	420mm × 410mm
drawer fronts (top)	16mm chipboard	2	309mm × 125mm
drawer fronts (bottom)	16mm chipboard	2	635mm × 125mm
drawer sides	16mm chipboard	8	559mm × 120mm
drawer backs (top)	16mm chipboard	2	264mm × 120mm
drawer backs (bottom)	16mm chipboard	2	590mm × 120mm
shelf	16mm chipboard	1	420mm × 285mm
drawer bases and back	4mm plywood		1 full sheet
end frame top & bottom	50mm × 25mm ramin	4	536mm approx.
end frame sides	50mm × 25mm ramin	4	560mm
hardwood edging	22mm × 16mm ramin		approx. 10.1 metres
drawer runners	19mm × 12mm ramin		approx. 4 metres
drawer runners	25mm × 12mm ramin		approx. 1.2 metres

Additional materials: 4 No. brass flush hinges, 12mm No. 6 (3.6mm) countersunk chipboard screws, 25mm No. 6 (3.6mm) countersunk chipboard screws, plywood offcuts for tongues, dowels, ramin offcuts for handles, door catches, PVA adhesive

Finish: Black woodstain, polyurethane or melamine lacquer

Advertising Arts

In next week's issue

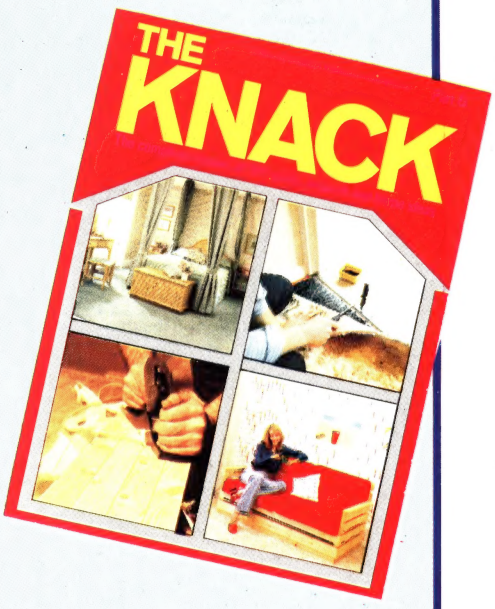
Beautiful bedrooms. Since you spend so much time in the bedroom you should think of practicality, personal style, comfort and visual appeal when you come to decorate it. After seeing our individual designs you can follow our step-by-step guide to achieving a four-poster effect.

Wood planing. Making wood fit spaces exactly requires accurate planing. We advise you on which planes to use and how to do a perfect job. Then you can make our attractive two-seater wooden sofa.

Perfect carpet laying. You can save on fitting costs by laying your carpet and underlay yourself. We show you all the stages involved in making your carpet a perfect fit.
Why should carpeting be confined to the floor? Discover the elegance of taking it up onto furniture, baths and platforms.

Bricklaying explained. We show you different types of bond, types of mortar, building quoins and intervening walls to increase the bricklaying knowledge you've already gained.

Make an occasional table. The ideal table folds away when not in use and is a triangular shape to fit into corners. Follow our easy-to-make design which rises to any occasion.



Be sure to get your copy

AUSTRALIA AND NEW ZEALAND–DIY LAW

Electricity

In Queensland and Western Australia, only a licensed electrician is authorized to do any electrical work of any kind.

In the other States and Territories of Australia and in New Zealand, an unlicensed person may work on flexible cables and on appliances which connect to a socket outlet.

In all parts of Australia and New Zealand, work by an unlicensed person on permanent wiring, or equipment which is permanently connected to the supply, is prohibited.

Plumbing and drainage

In all States of Australia and in New Zealand, only a licensed plumber or licensed drainer is authorized to alter, extend or repair household plumbing or drain lines.

Do-it-yourselfers can undertake some minor repairs. But since the laws vary from one State to another, consult your water authority first.

Where to buy it

Where to buy it—UK

Stylish sideboard, page 136: Whitewood veneered chipboard, Contiboard, by Aaronson Bros. Ltd., Town Wharf, Rickmansworth, Herts. WD3 1HB. Wood stain: Colron Wood Dye in Tudor black oak by Sterling Roncraft, Chapeltown, Sheffield S30 4YP.

Skirting trouble, pages 130-135; Replacement boards available from some woodyards and builders' merchants.

Where to buy it—Canada

Stylish sideboard Page 136

Plywood and veneered chipboard: Weldwood of Canada Ltd, 1055 West Hastings Street, Vancouver, BC, V6B 3V8, Tel no: 604/668-3600. Vicply Inc. PO Box 119, Coboconk, Ontario, K0M 1K0, Tel no: 705/454-3304. Commonwealth Plywood Co. Ltd, 15 Labelle Boulevard, Ste, Therese, Quebec J7E 4H9, Tel no: 514/435-6541.

Wood stain: CIL Inc, 45 Sheppard Avenue East, Willowdale, Ontario, M2N 5S8, Tel no: 416/226-6110. Benjamin Moore and Co. Ltd, 15 Lloyd Avenue, Toronto, Ontario, M6N 1G9, Tel no: 416/766-1176.

Buying timber

Timber everywhere is sold in 'nominal' sizes. That is, the size quoted is not the size of the finished board you buy, but the approximate size of the rough-sawn timber from which the board has been machined.

Particularly when buying mixed materials for the same project, always take a ruler to the store and measure the actual widths and thicknesses. Hardwood edging strips and softwood shelving, for example, may be of different thicknesses.

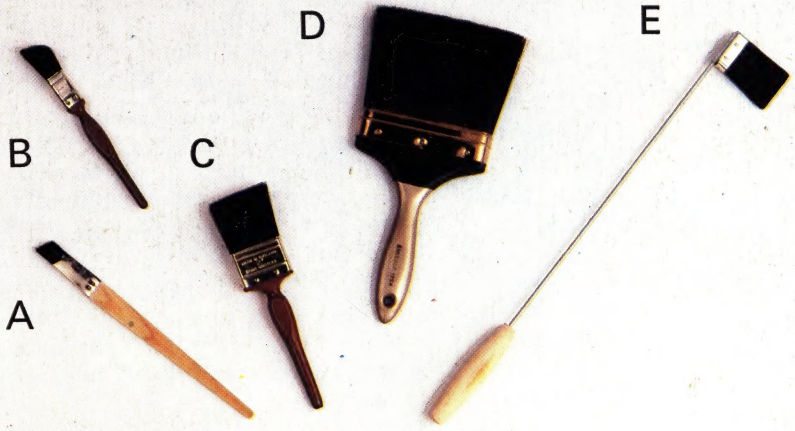
Cutting lists

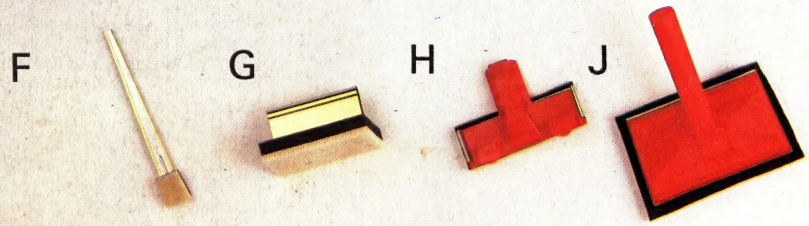
Because of varying widths and thicknesses, cutting lists can be accurate only to within a few mm.

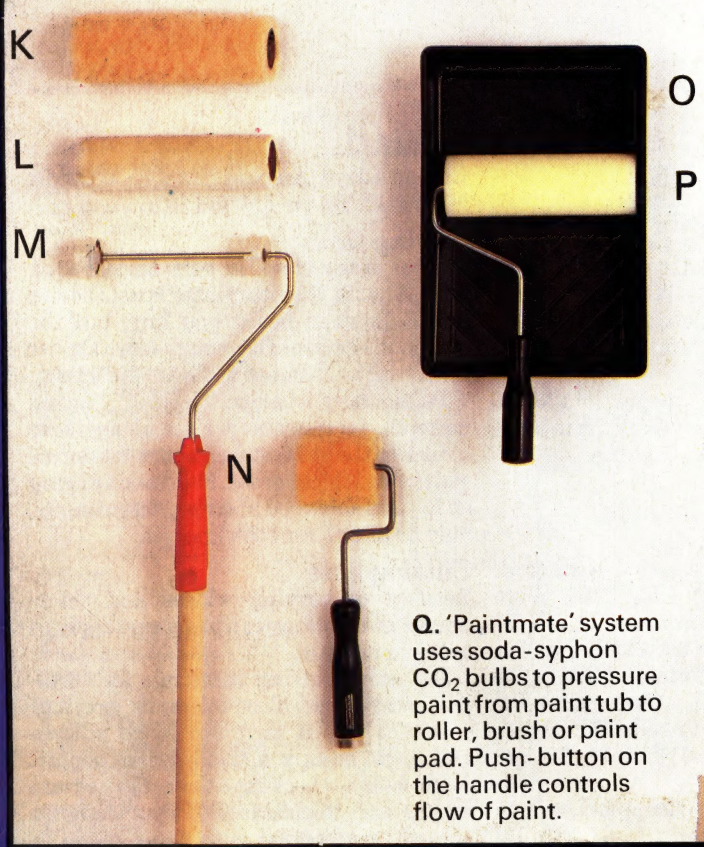
So, when cutting materials for furniture and other close-tolerance projects —particularly if they are to be built-in and must occupy a fixed overall length —start by checking that the actual widths and thicknesses of your material actually correspond with those given in the diagrams.

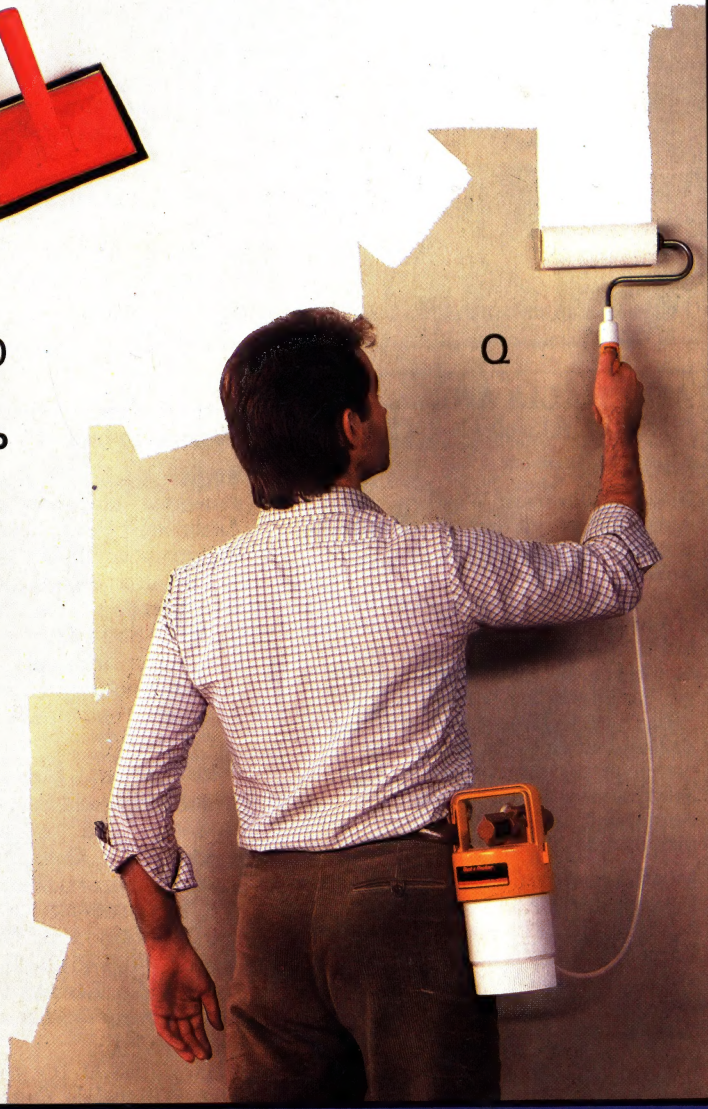
Painting tools

For most painting jobs you can choose a brush, a pad or a roller—depending on which you prefer. Some examples: **A.** Fine-lining brush. **B.** Angled 'cutting-in' brush for internal angles where two colours meet. **C.** 50mm brush for woodwork. **D.** 125mm emulsion brush for walls. **E.** Radiator brush for radiator backs, behind pipes etc. **F.** Paint pad for 'cutting-in'. **G.** Mohair paint pad for oil paints. **H.** Sponge paint pad for emulsion. **J.** 'Cutting-in' pad. **K.** Long-pile roller for textured and rough walls. **L.** Short-pile roller for smoother walls. **M.** Extendable roller handle. **N.** 'Cutting-in' roller. **O.** Roller tray. **P.** Cheap, disposable plastic roller.









Q. 'Paintmate' system uses soda-syphon CO_2 bulbs to pressure paint from paint tub to roller, brush or paint pad. Push-button on the handle controls flow of paint.